Integrated Resource Inventory

Keg River Area Volume I

Alberta
ENERGY AND
NATURAL RESOURCES
Resource Evaluation
and Planning

88-04020/

INTEGRATED RESOURCE INVENTORY
OF
THE KEG RIVER STUDY AREA

Volume I

Physical Land Classification and Ecological Land Classification

by

Diana Brierley
David Downing
Dennis O'Leary

1985
Edmonton

Resource Information Services
Resource Evaluation and Planning
Alberta Energy and Natural Resources

ENR Technical Report Number: T/87 - No. 1
ISBN: 0-86499-272-6

FOR ADDITIONAL COPIES OF THIS REPORT, CONTACT:

Information Centre
Alberta Energy and Natural Resources
Main Floor, Bramalea Building
9920 - 108 Street
Edmonton, Alberta, Canada T5K 2M4

Telephone: (403) 427-3590

FOR ADDITIONAL COPIES OF MAPS, CONTACT:

Alberta Map and Air Photo Distribution Centre
North Tower, 2nd Floor
9945 - 108 Street
Edmonton, Alberta, Canada T5K 2C9

Other titles in the set include:

T/87 - No. 2 - Vegetation Classification of the Keg River Study Area

EXECUTIVE SUMMARY

The Keg River study area is located in northwestern Alberta, 120 km north of Peace River and 100 km south of High Level. An Integrated Resource Inventory was initiated for the area during the spring of 1984 with the intent of collecting, analyzing and evaluating data on the natural resources of the area in support of a subregional plan. This report consists of two volumes: the first deals with background information, land classification and evaluations, and the second deals with the vegetation classification for the study area.

The study area occurs within portions of the Peace River Lowlands, Clear Hills Upland and the Fort Vermilion Lowlands physiographic regions. These regions were glaciated during late Pleistocene times and subsequently mantled with glaciolacustrine, glaciofluvial and morainal deposits. Depressional areas have since infilled with organic accumulations.

The vegetation of the Keg River study area is indicative of the Boreal Mixedwood Ecoregion, in particular the Lower Boreal Mixedwood Subzone. The Peace River and Fort Vermilion lowlands are characterized by aspen forests, while aspen-white spruce forests are typical of the Clear Hills Upland. Portions of the Peace River and Fort Vermilion lowlands have been cleared for agriculture.

In general, the entire Peace River Lowlands and a significant portion of the Fort Vermilion Lowlands have been rated as having good to fairly good arable soils for till cropping. Most of the lower slopes of the Clear Hills Upland have also been rated as having good to fairly good arable soils; however, most of the soils in the Clear Hills Upland have been rated as non-arable for till cropping.

Forest productivity within the Clear Hills Upland and the Fort Vermilion Lowlands is generally rated as moderate to high, while forest productivity within the Peace River Lowlands is rated as moderate.

The habitat suitability for ungulates is highly variable within the study area. The Peace River Lowlands are rated as having a low habitat suitability for ungulates, while the Fort Vermilion Lowlands are rated as moderate. The Clear Hills Upland provides the most favorable habitat for ungulates and is rated as moderate to high.

TABLE OF CONTENTS

Page

Volume I

Executive Summary iii

List of Tables viii

List of Figures x

List of Plates xi

Preface xiii

Acknowledgments xv

1. INTRODUCTION 1

  1.1 Purpose 1
  1.2 Location 1
  1.3 Land Uses 4
    1.3.1 Oil and Gas 4
    1.3.2 Forestry 5
    1.3.3 Agriculture 6
    1.3.4 Transportation 7
    1.3.5 Trapping 8
    1.3.6 Recreation 9

2. NATURAL RESOURCES 11

  2.1 Physiography and Bedrock Geology 11
    2.1.1 Peace River Lowland 11
    2.1.2 Clear Hills Upland 14
    2.1.3 Fort Vermilion Lowland 15

  2.2 Quaternary History and Surficial Materials 16

  2.3 Climate 18
    2.3.1 Temperature 19
    2.3.2 Frost-Free Period 19
    2.3.3 Growing Degree Days 22
    2.3.4 Precipitation 25
    2.3.5 Evapotranspiration 26

  2.4 Soils 27
    2.4.1 Peace River Lowland 29
    2.4.2 Clear Hills Upland 29
    2.4.3 Fort Vermilion Lowland 31

Page

2.5 Vegetation 32

2.6 Hydrology 34
  2.6.1 Notikewin Subdivision 36
  2.6.2 Keg River Subdivision 36
  2.6.3 Peace River Residual 37
  2.6.4 Boyer River Subdivision 37
  2.6.5 Chinchaga River Subdivision 38

2.7 Wildlife and Fisheries 39

3. METHODS 41

3.1 Physical Land Classification 41
3.2 Forage Inventory 42
3.3 Ecological Land Classification 44
3.4 Fluvial Classification 46
3.5 Integration/Linkages 46
3.6 Data Collection and Analysis 47
3.7 Till Cropping Evaluation Method 49
3.8 Forestry Evaluation Methods 53
  3.8.1 Productivity Evaluation 53
  3.8.2 White Spruce Regeneration Probability 55

3.9 Wildlife Evaluation Methods 56

4. ECOREGION 65

5. DESCRIPTIONS OF MAPPED LANDSCAPES 79

5.1 Peace River Lowland Physiographic Regoin 79
  5.1.1 Ecosection Descriptions 80
  5.1.2 Land Use Ratings 84

5.2 Clear Hills Upland Physiographic Region 85
  5.2.1 Ecosection Descriptions 87
  5.2.2 Land Use Ratings 105

5.3 Fort Vermilion Lowland Physiographic Region 108
  5.3.1 High Level Plain Physiographic Subregion . . . 108
    5.3.1.1 Ecosection Descriptions 110
    5.3.1.2 Land Use Ratings 121

  5.3.2 Chinchaga Plain Physiographic Subregion . . . 123
    5.3.2.1 Ecosection Descriptions 126
    5.3.2.2 Land Use Ratings 132

5.4 Classification of Fluvial Ecosections 134
  5.4.1 Ecosection Descriptions 134
  5.4.2 Land Use Ratings 139

Page

APPENDIX 1 - TILL CROPPING RATING SCHEDULE DEVELOPED FOR THE KEG RIVER STUDY AREA BY PUBLIC LANDS DIVISION AND ALBERTA AGRICULTURE 141

LIST OF REFERENCES 145

Volume I

LIST OF TABLES

Table Page

1 Combined Economic Value of the Eleven Registered Traplines in the Keg River Study Area (1983-84 Dollars) 9

2 Selected Climatic Parameters for Selected Climatic Stations in the Vicinity of the Keg River Study Area 20

3 Average Daily Maximum and Minimum Temperatures for the Clear Hills Upland and the Fort Vermilion and Peace River Lowland for the May to September Period in °C 21

4 Spring and Fall Frost Probabilities for the Clear Hills Upland and the Fort Vermilion and Peace River Lowland 21

5 Adjusted Growing Degree Days (May to September) for the Keg River Study Area 24

6 Crop Requirements 25

7 Potential Evapotranspiration of Selected Climatic Stations in the Keg River Study Area 28

8 Average Aridity Indexes for Selected Climatic Stations within the Peace River Region 28

9 Soil Rating Schedule, 1979 50

10 Soil Rating Evaluation 52

11 Storie Index Ratings 52

12 Thermal Cover Requirements for Moose During the Fall/Winter Period 58

13 Thermal, Reproductive and Escape Cover Requirements for Moose During the Spring/Summer Period 59

14 Thermal Cover Requirements for Mule Deer During the Fall/Winter Period 60

15 Land Use Ratings for the Peace River Lowland 84

16 Land Use Ratings for the Clear Hills Upland 105

17 Land Use Ratings for the High Level Plain 121

Table Page

18 Land Use Ratings for the Chinchaga Plain 132

19 Land Use Ratings for Fluvial Ecosections 139

20 Interpretation of the Till Cropping Rating Schedule . . . 143

Volume I

LIST OF FIGURES

Figure | Page

1.1 Location Map 2

1.2 Keg River Study Area 3

2.1 Physiographic Regions and Subregions of the Keg River Study Area 12

2.2 Bedrock Geology of the Keg River Study Area 13

2.6 Drainage Basins of the Keg River Study Area 35

3.1 Physical Land Classification Geomorphic Unit Symbol . . 43

3.6 Site Location Map 48

4.1 Ecoregions of the Keg River Study Area: Lower Boreal Mixedwood Subzone 66

5.1 Schematic Diagram of the Peace River Lowland Physiographic Region 81

5.2 Schematic Diagram of the Clear Hills Upland Physiographic Region 88

5.3.1 Schematic Diagram of the High Level Plain Physiographic Subregion 111

5.3.2 Schematic Diagram of the Chinchaga Plain Physiographic Subregion 125

List of Plates

Volume I

Plate		Page
1	A Barley Field in the Vicinity of Keg River	68
2	Exposed Bedrock Along Gravina Creek	68
3	Profile of a Solonetzic Gray Luvisol	68
4	Profile of a Dark Gray Solod	68
5	Profile of an Orthic Luvic Gleysol	70
6	Profile of an Eluviated Dystric Brunisol	70
7	Cultivated Land in the Peace River Lowland (PRL.GL2)	70
8	Panoramic View of the Hawk Hills (CHU.CM1)	70
9	Salt Lick on the East Slope of Hawk Hills (CHU.CX1)	72
10	Varied Ecological Conditions in Ecosection CHU.GF01	72
11	Side Slope of Hawk Hills (CHU.GL3)	72
12	Panoramic View of Ecosections CHU.M1 and CHU.MF1 from the Battle River Tower	72
13	Rolling Morainal Upland (CHU.M3)	74
14	Agricultural Land in the Vicinity of Keg River (HLP.GL1)	74
15	Humpy Doughnut Topography of Ecosection HLP.GL2	74
16	Humpy Doughnut and Wetland Topography of Ecosection HLP.GL02	74
17	Maintain Our Forest Project Clearing in Ecosection CP.M2	76
18	Varied Ecological Conditions in Ecosection CP.M01	76
19	Chinchaga River	76
20	Wetland Terrain in Fort Vermilion Lowland	76

PREFACE

The Keg River Integrated Resource Inventory was initiated in 1984 at the request of the Resource Planning Branch of Resource Evaluation and Planning Division and the Forest Land Use Branch of Alberta Forest Service. The purpose of this study was to collect, analyse and evaluate information about the natural resources of the Keg River area in support of a subregional plan.

This report provides a general description of the natural resources of the area, a discussion of the inventory methods, detailed information on the physical and biological characteristics of the landscape and evaluations of individual landscapes for agriculture, forestry and wildlife purposes. The text is accompanied by a 1:100 000 Ecological Land Classification map and six 1:50 000 Physical Land Classification maps.

This information is intended for use at a scale of 1:100 000. Interpretation of this data at other scales may constitute misuse.

The following individuals are responsible for the individual inventories: Diana Brierley, Physical Land Classifiation; Dave Downing, Vegetation Classification and Dennis O'Leary, Ecological Land Classification.

ACKNOWLEDGMENTS

The Integrated Resource Inventory of the Keg River study area was conducted by Resource Information Services, Resource Evaluation and Planning Division. Funds for fieldwork and map compilation were provided by Resource Evaluation and Planning Division, Alberta Energy and Natural Resources.

The authors of this report would like to thank the following individuals and organizations.

Ken Dutchak, Project Manager, for his suggestions during the course of this study and reviewing the report.

Cheryl Garbutt, Resource Evaluation and Planning, for her patience in typing of the manuscript.

Cartographic Services, Resource Evaluation and Planning Division, for preparation of maps and figures.

Serge Dupuis, Resource Evaluation and Planning Division, for provision of climate data and review of report.

Harry Archibald, Resource Evaluation and Planning Division, for assistance in the early stages of the field inventory, discussions on ecosection zonation, and review of report.

Debbie Schindeler, Jill Veltman, Ted Burke, Peter Koning, and Reg Schultz for their assistance in field inventory.

Dale Vitt (University of Alberta) and George Argus (National Museum of Canada) for assistance with non-vascular and willow identification, respectively.

Evadney Chambers, Dean Patterson and Trudy Tremblay for their assistance in data analysis.

The management and staff of Natural Resources Information Services who contributed through discussion and criticism.

Regional Alberta Forest Service, Fish and Wildlife, and Public Lands staff in Peace River, in particular, Ollie Erdell of Peace River AFS and Phil Dube of the Manning Ranger Station, for their assistance in field logistics.

Jim Rivait (Resource Planning Branch), Vern Danes (Alberta Forest Service), Knut Moller (Alberta Fish and Wildlife), Dan Grahn (Public Lands), and Elaine Ryl (Alberta Agriculture); members of the Keg River planning team for their assistance in evaluations and for providing insight into the planning process.

1. INTRODUCTION

1.1 Purpose

The purpose of this study is to provide an Integrated Resource Inventory of the Keg River study area. This inventory will be used to support work of the Management Planning Section of the Resource Planning Branch, the Resource Planning Section of Forest Land Use Branch, and other department and government agencies such as Fish and Wildlife, Public Lands and Alberta Agriculture. An integrated resource inventory involves the collection, analysis and evaluation of natural resource data to provide a synthesis of the landscape features for the purpose of natural resource management.

1.2 Location

The Keg River study area is located in northwestern Alberta and includes the farming communities of Hawk Hills and Keg River (Figure 1.1). The study area extends northward along Highway 35 from the Chinchaga Forestry Road in the south to the Paddle Prairie Metis Colony in the north and west from the Keg River settlement towards the Chinchaga River. It lies between 57°07' and 57°52' north latitude and 117°15' and 118°20' west longitude and includes all or portions of Townships 94 to 102, Ranges 21 to 25, W5M and all or portions of Townships 101 to 103, Ranges 1 to 2, W6M (Figure 1.2). The total land area is 1 774 km^2 (685 sq. mi.).

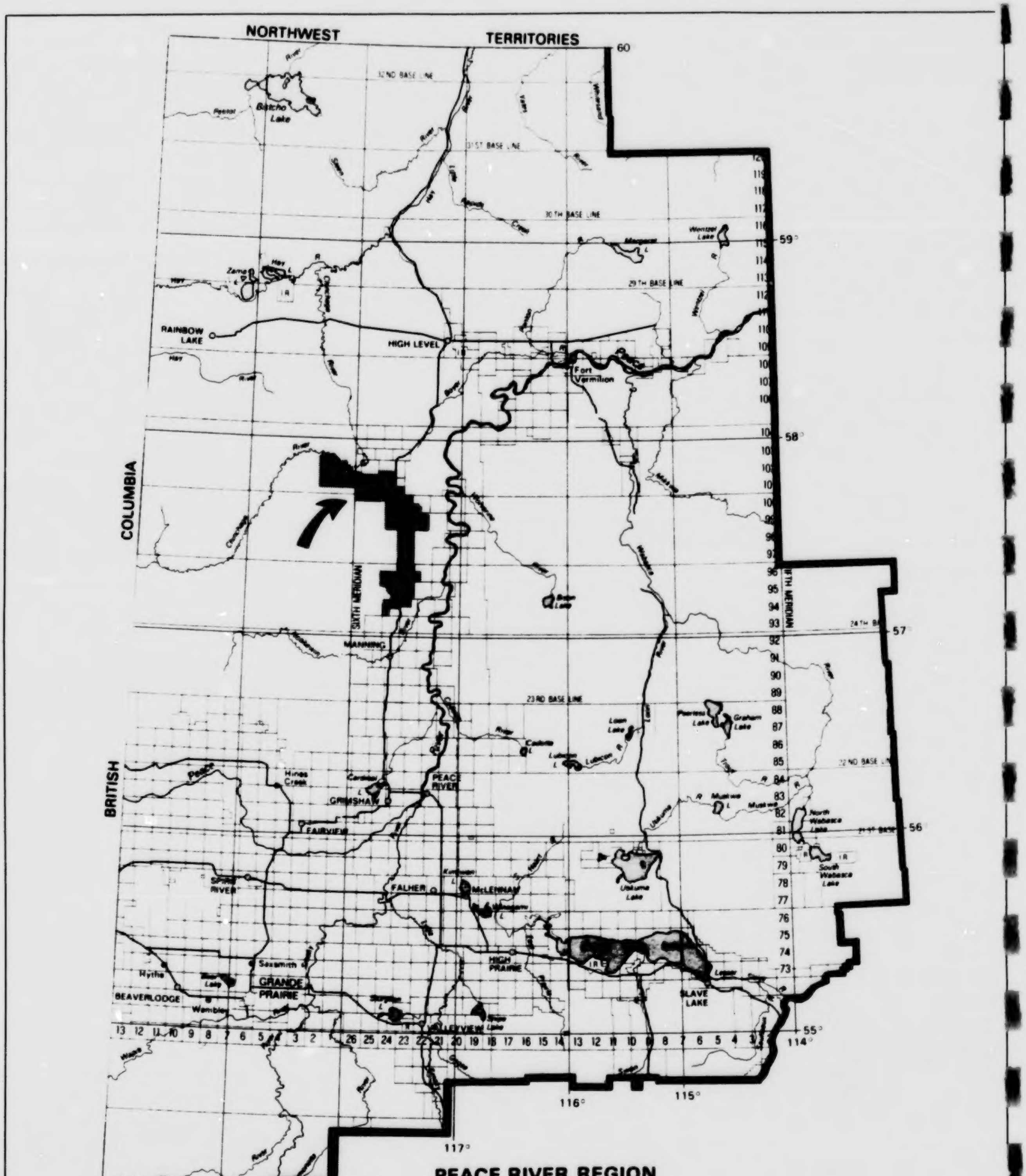

NORTHWEST
TERRITORIES
BRITISH
COLUMBIA
Bistcho Lake
Zama L
Hay L
RAINBOW LAKE
HIGH LEVEL
Fort Vermilion
Wentzel Lake
Margaret L
30 TH BASE LINE
29 TH BASE LINE
31 ST BASE LINE
32 ND BASE LINE
23 RD BASE LINE
22 ND BASE LINE
SIXTH MERIDIAN
5TH MERIDIAN
MANNING
Hines Creek
Cardinal L
GRIMSHAW
PEACE RIVER
FAIRVIEW
SPIRIT RIVER
FALHER
McLENNAN
HIGH PRAIRIE
Saxonmith
Rycroft
GRANDE PRAIRIE
BEAVERLODGE
Wembley
Sturgeon L
VALLEYVIEW
SLAVE LAKE
Utikuma Lake
Loon Lake
Lubicon L
Cadotte L
Peerless Lake
Graham Lake
North Wabasca Lake
South Wabasca Lake
60
59°
58°
57°
56°
55°
54°
114°
115°
116°
117°
118°
119°
120°
PEACE RIVER REGION
SCALE 1:3 000 000
km. 60 30 0 30 60
mi. 30 0 30
Alberta
ENERGY AND NATURAL RESOURCES
Resource Evaluation and Planning Division

Figure 1.1 LOCATION MAP

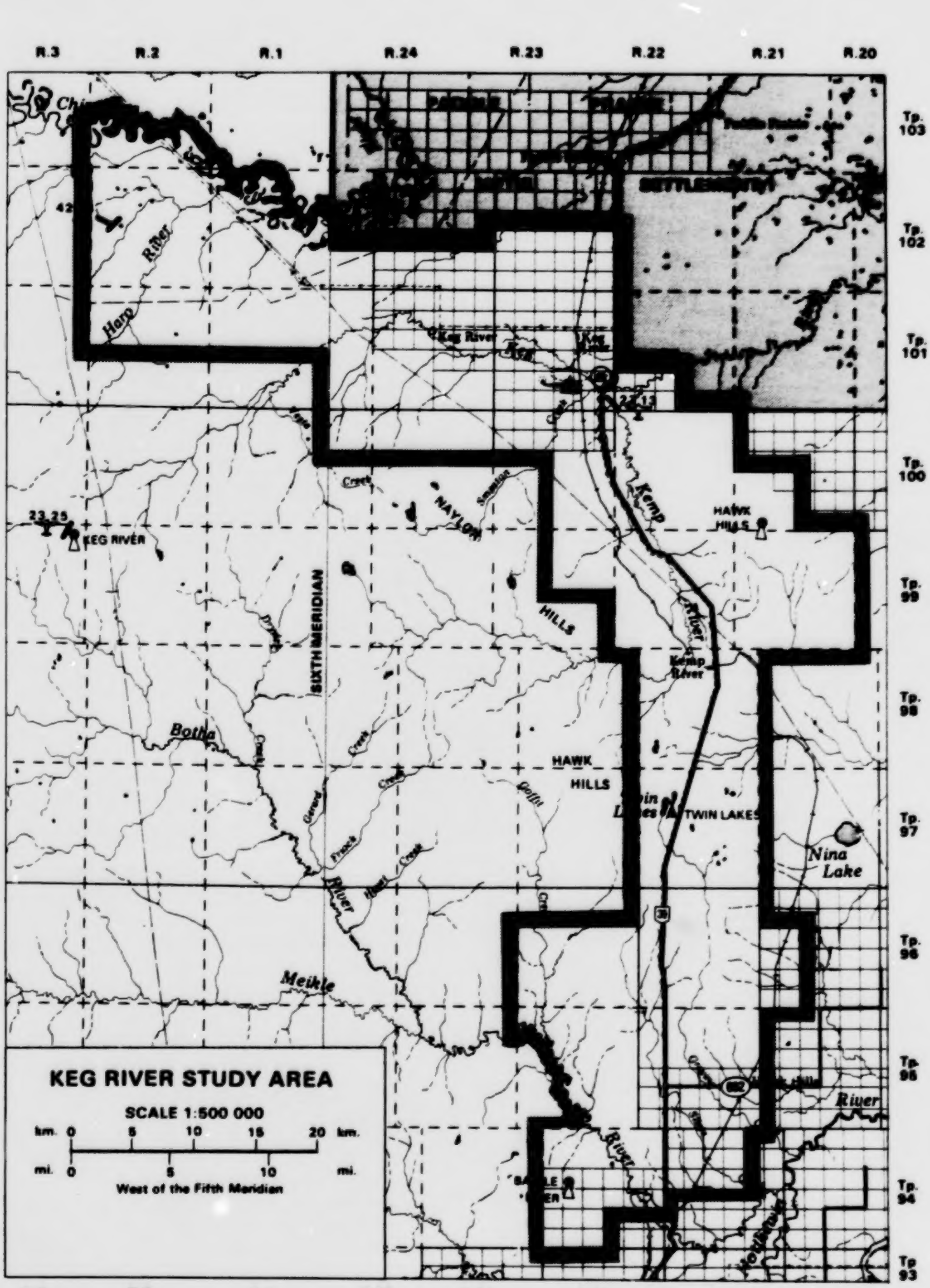

R.3
R.2
R.1
R.24
R.23
R.22
R.21
R.20
Tp. 103
Tp. 102
Tp. 101
Tp. 100
Tp. 99
Tp. 98
Tp. 97
Tp. 96
Tp. 95
Tp. 94
Tp 93
SETTLEMENT
Keg River
Keg River
Haro River
KEG RIVER
NAYLOR
HILLS
SIXTH MERIDIAN
Kemp River
Kemp River
HAWK HILLS
HAWK HILLS
Botha
TWIN LAKES
Twin Lakes
Nina Lake
Meikle
River
BATTLE RIVER
River
KEG RIVER STUDY AREA
SCALE 1:500 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
R.3
R.2
R.1
R.25
R.24
R.23
R.22
R.21

Figure 1.2 STUDY AREA MAP

Major population centres occur both north and south of the area. Peace River is 120 km south of the study area boundary and Manning is 20 km south, while High Level is 100 km north of the study area boundary.

1.3 Land Use

The following land uses are discussed individually for the Keg River study area: oil and gas development, forestry and agricultural operations, transportation, trapping and recreation. While many of these land uses are compatible, others are not and may eventually create land use conflicts.

1.3.1 Oil and Gas

Oil and gas exploration within the Keg River study area dates back to the 1940s. It was not until the mid-1970s, however, that extensive exploration activities began. This coincided with the discovery of the Boyer and Haro gas fields west and north of Keg River. The Boyer field includes all or portions of Townships 100 to 102, Ranges 23 to 25, W5M and all of Townships 101 and 102, Range 1, W6M. The Haro field includes all or portions of Townships 101 to 103, Range 2, W6M. Both fields extend north and west of the study area. Within the study area, by October 1984 there were 49 active and 17 capped gas wells in the Boyer field and 9 active and 5 capped gas wells in the Haro field. Production is mainly from the Lower Cretaceous Bluesky and Gething Formations (Energy Resources Conservation Board 1984). There has been limited exploration within the Clear Hills Upland and Peace River Lowland and there are no producing wells in these areas.

A major oil pipeline extending from Rainbow Lake, Alberta, crosses the Fort Vermilion Lowlands in a northwest-southeast direction from the Chinchaga River through the basin-like area between the Naylor and Hawk Hills. It is owned by Rainbow Pipe Line Company Ltd., and transports oil from the Rainbow and Zama fields further north to the refineries in central Alberta.

1.3.2 Forestry

Forestry operations have been ongoing within the Keg River area since the early 1960s. These operations are salvage logging and, to a minor extent, firewood cutting. Salvage operations are done to reduce further damage to mature white spruce stands by Engelmann spruce beetle.

Logging and cutting have been restricted to Forest Management Unit P10 which covers most of the study area with the exception of the area in the vicinity of Hawk Hills (V. Danes, Alberta Energy and Natural Resources, June 1985, personal communication). Approximately 60 901 m^3 of softwood has been harvested from Forest Management Unit P10 since 1960 (J. Scheffer, Alberta Energy and Natural Resources, January 1985, personal communication). CANFOR currently holds a major timber quota for a portion of the area.

Several areas near the Chinchaga and Haro rivers have been cleared in recent years and replanted with white spruce for the Maintain Our Forest (MOF) Program. Portions of the forests west of the Meikle River have been selectively thinned.

1.3.3 Agriculture

Agricultural activities within the Keg River study area date back to 1931 with the arrival of Mr. Frank and Dr. Margaret Jackson to what is now known as Keg River Post (Philip 1983). The expansion of agriculture into this frontier area was closely tied to the occurrence of parkland-type soils extending in a belt from Keg River northeastward along the Boyer River to Paddle Prairie. Maxwell (1964) described the Keg River settlement as an agricultural outpost in the forest expanse. The development of the Hawk Hills area in the south during the 1950s resulted largely as an extension of the Battle River farming community south of the Meikle River.

The direction of farming has changed significantly within the past twenty-five years. In 1961 (Maxwell 1964), 53 per cent of all farming operations in the Keg River, Hawk Hills and Paddle Prairie areas were classed as cattle, hog and sheep operations, while 44 per cent were classed as grain operations. Early emphasis was on feed grains and associated livestock production; today, these have been replaced by annual cereal crops and oil seeds (Plate 1). Of the major crops grown during the 1983-84 crop year, canola accounted for 33 per cent of the seeded land, while barley accounted for 30 per cent, wheat 27 per cent and perennial forage crops 10 per cent.

According to Chanasyk and others (1983), delays in farming operations in the area are the result of unfavorable interactions of climate, soils and hydrography. Not only does the climate limit the types of crops that can be grown successfully, but it interacts with soils to create management problems in seeding and harvesting. Spring seeding is often delayed because ponded spring meltwaters create problems in moving equipment, reduce aeration and maintain low soil temperatures. Similarily, harvesting operations are often interrupted; untimely fall rains can make it difficult to operate equipment on the fields and crops do not dry quickly enough to harvest.

1.3.4 Transportation

The development of major transportation facilities has strongly influenced the economic development of the area. Until the completion of the MacKenzie Highway (Highway 35) from Grimshaw to Hay River in 1948, transportation was limited mainly to winter roads and the Peace River. Completion of the highway increased access and made travel easier. Economic benefits of improved access include service industries such as a service station at Keg River and a lodge and service station at Twin Lakes, as well as cost savings by farmers.

With the construction of the Great Slave Lake Railway between 1962 and 1965, a major shift in agricultural activities occurred in the north. The change from road to rail transport saw freight rates on grain decrease from $0.075 to $0.005 per ton mile (Manning 1960). This decrease resulted in a change from forage and livestock production to one of cereal and oil seed crops. Increased savings to farmers also afforded them the opportunity to develop additional land (Maxwell 1964).

Extensive oil and gas exploration during the 1970s produced a network of seismic and transmission lines, especially in the area west of Keg River. Because of wet soils and organic accumulations, however, many of these are impassable to vehicles except in winter when soils are frozen.

1.3.5 Trapping

With the exception of the agricultural lands near Hawk Hills and Keg River, the study area is covered by 11 registered traplines. Complete data for these traplines are available for the 1977-78 to 1983-84 period. The major species trapped are beaver, coyote, fisher, lynx, marten, mink, muskrat, weasel and squirrel. Smaller numbers of black bear, fox, wolf and wolverine are also trapped.

The combined economic value of the 11 registered traplines is shown in Table 1. The economic importance of trapping is closely tied to lynx populations ($347.27 per pelt) which they were the bulk of the revenue in the high years. In recent years the number of lynx trapped has dropped significantly, while the numbers of coyote ($48.05 per pelt), marten ($49.40 per pelt) and fisher ($128.00 per pelt) trapped have risen sharply. The revenue generated from trapping within the study area accounts for approximately 0.5 per cent of the provincial total.

Table 1

COMBINED ECONOMIC VALUE OF THE 11 REGISTERED TRAPLINES IN THE KEG RIVER STUDY AREA (1983-84 DOLLARS)

Trapping Period	Revenue ($)
1977-78	27 771.28
1978-79	48 530.05
1979-80	64 725.44
1980-81	86 449.30
1981-82	48 152.70
1982-83	37 946.19
1983-84	29 558.27

1.3.6 Recreation

The main recreational opportunity within the Keg River study area is hunting. Other activities are fishing, camping and swimming. The area is used mainly by the local population.

Most hunting in the study area is for moose. Deer, bear and grouse are hunted to a much lesser extent. The Chinchaga, Meikle and Kemp rivers and Twin Lakes provide fishing opportunities. Pike, walleye and grayling are found in the rivers. Alberta Fish and Wildlife annually stock Twin Lakes with rainbow trout.

An Alberta Provincial Parks Recreation Area has been established at Twin Lakes. This facility provides opportunities for camping, swimming and fishing. Also, a small recreational area with limited facilites is located on a sandy point bar of the Chinchaga River.

2. NATURAL RESOURCES

2.1 Physiography and Bedrock Geology

The Keg River study area occurs within three physiographic regions as defined by Pettapiece (1981) (Figure 2.1). These include the Peace River and Fort Vermilion lowlands and the Clear Hills Upland. These physiographic regions are delineated on the basis of bedrock geologic structure and elevation.

Previous bedrock geology studies in the area include work by Russell (1943), Law (1955), Green and Mellon (1962), and Lang (1965). Tokarsky (1972) and Ozoray (1982) have conducted hydrogeological surveys of the Bison Lake (84F) and the Clear Hills-Chinchaga River map (84E) areas, respectively.

2.1.1 Peace River Lowland

The Peace River Lowland occurs in the extreme southern portion of the study area and extends 12 km northward from the Meikle River to the Clear Hills Upland. This nearly level to very gently undulating plain slopes to the southeast from 595 masl in the northwest to 470 masl in the southeast corner of the study area. Drainage is provided by the Meikle River and Slims and Gravina creeks.

Soft, marine shales of the Lower Cretaceous Upper Shaftesbury Formation underly the entire Peace River Lowland region (Figure 2.2).

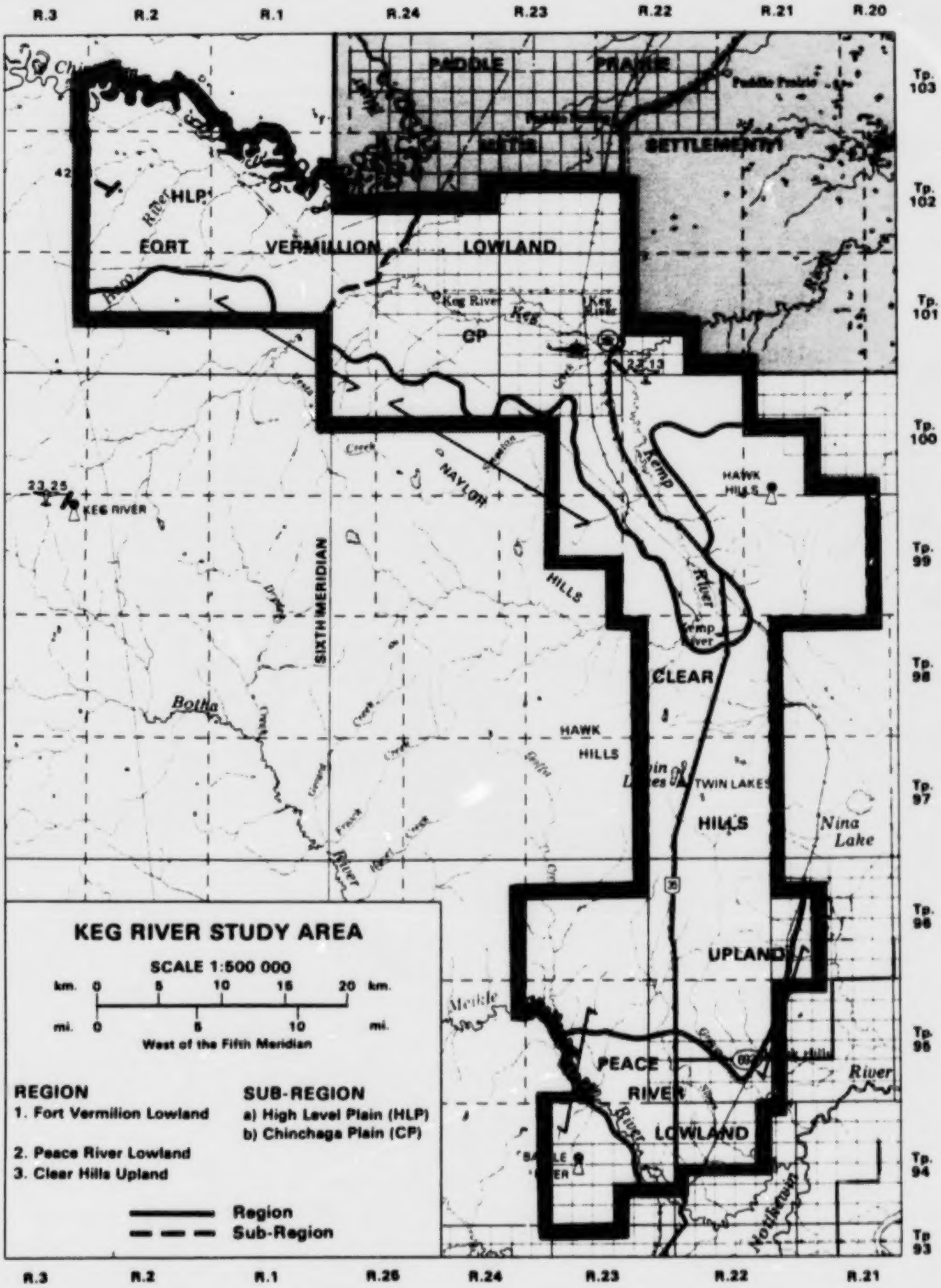
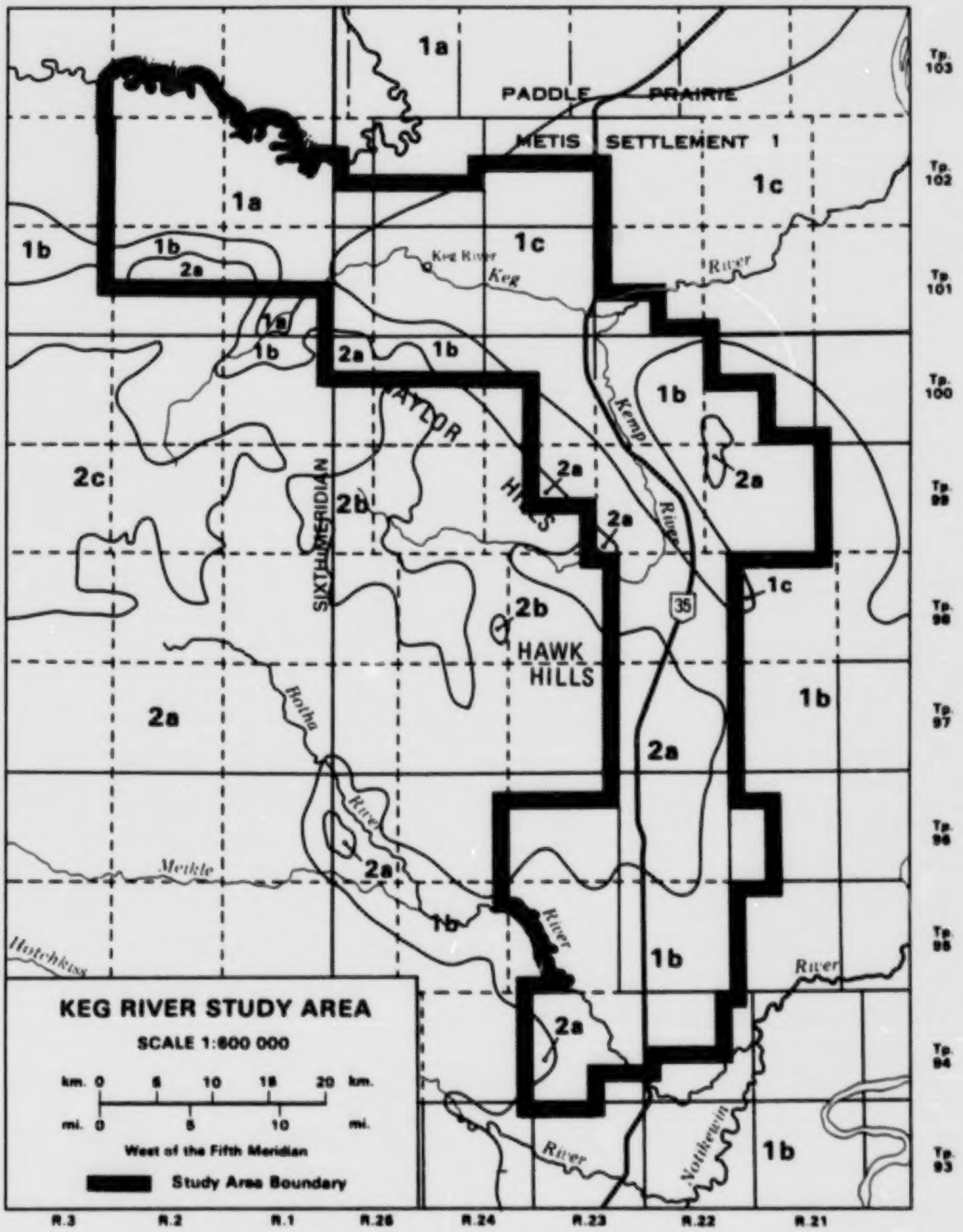

KEG RIVER STUDY AREA
SCALE 1:500 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
REGION
1. Fort Vermilion Lowland
2. Peace River Lowland
3. Clear Hills Upland
SUB-REGION
a) High Level Plain (HLP)
b) Chinchaga Plain (CP)
Region
Sub-Region
PADDLE PRAIRIE METIS SETTLEMENT
FORT VERMILLION LOWLAND
HLP
CP
NAYLOR HILLS
CLEAR HILLS UPLAND
PEACE RIVER LOWLAND
HAWK HILLS
TWIN LAKES
KEG RIVER
SIXTH MERIDIAN
Nina Lake
R.3 R.2 R.1 R.24 R.23 R.22 R.21 R.20
R.3 R.2 R.1 R.25 R.24 R.23 R.22 R.21
Tp. 103 Tp. 102 Tp. 101 Tp. 100 Tp. 99 Tp. 98 Tp. 97 Tp. 96 Tp. 95 Tp. 94 Tp. 93

Figure 2.1 PHYSIOGRAPHIC REGIONS AND SUB-REGIONS


1a
PADDLE PRAIRIE
METIS SETTLEMENT 1
1c
1a
1b
1b
2a
Keg River
Keg
River
1c
1a
1b
2a
1b
TAYLOR HILLS
Kemp River
1b
2a
2c
SIXTH MERIDIAN
2b
2a
2a
35
1c
2b
HAWK HILLS
Botha
2a
2a
1b
River
Meikle
2a
1b
River
Hotchkiss
1b
River
2a
River
Notikewin
1b
KEG RIVER STUDY AREA
SCALE 1:600 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
Study Area Boundary
Tp. 103
Tp. 102
Tp. 101
Tp. 100
Tp. 99
Tp. 98
Tp. 97
Tp. 96
Tp. 95
Tp. 94
Tp. 93
R.3
R.2
R.1
R.25
R.24
R.23
R.22
R.21

1) LOWER CRETACEOUS

a) Lower Shaftesbury Formation

b) Upper Shaftesbury Formation

c) Loon River Formation

2) UPPER CRETACEOUS

a) Dunvegan Formation

b) Kaskapau Formation

c) Puskwaskau Formation

Adapted from: R. G. Mellon (1962) and O. Tokarsky (1972)

Figure 2.2 BEDROCK GEOLOGY OF THE KEG RIVER AREA

These shales are dark gray in colour and are silty in the upper part with thin beds of concretionary ironstone (Ozoray 1982). The easily erodible nature of these shales is evidenced by the deeply entrenched stream courses of the Meikle River, Slims Creek and Gravina Creek. Surficial materials are comprised of moderately well to poorly drained glaciolacustrine and lacustrotill deposits.

2.1.2 Clear Hills Upland

The Clear Hills Upland includes much of the central portion of the study area and includes both the Naylor and Hawk Hills. This rugged, partially fluted upland area ranges in elevation from 490 masl near the Hawk Hills Grain Elevator in the southeast to over 725 masl atop both Naylor and Hawk Hills. Topography varies from gently undulating to moderately sloping with strong to extreme slopes along the scarp face of the Naylor Hills. The southern portion of the region is drained by the Meikle River and its tributaries and in the north by the Keg and Haro rivers and their tributaries.

The Clear Hills Upland is also underlain by shales of the Lower Cretaceous Upper Shaftesbury Formation (Figure 2.2). These dark gray, easily erodible marine shales are capped at higher elevations by a sequence of interbedded sandstones and shales of the Upper Cretaceous Dunvegan Formation. These in turn are overlain in places by acid sulphate shales of the Upper Cretaceous Kaskapau Formation which outcrop locally and is composed of a sequence of soft, silty shales and fine-grained ferruginous sandstones (Plate 2). The occurrence of this formation is believed to be more extensive than previously mapped.

The structural configuration of the strata has been described by Green and Mellon (1962) as a gentle anticline.

Surficial materials consist primarily of till and residual deposits with lacustrotill deposits below 600 masl on the east side of the Hawk Hills. Extensive complexes of glaciofluvial and organic materials are found south of Twin Lakes. The nature of these materials has been strongly influenced by the presence and depth of the Kaskapau Formation.

2.1.3 Fort Vermilion Lowland

The Fort Vermilion Lowland occurs north of the Clear Hills Upland and extends southward into the basin-like area between the Naylor and Hawk hills. The region slopes to the north and east; elevations range from 535 masl adjacent the Clear Hills Upland to 380 masl where the Keg River leaves the study area.

This region has been subdivided into two physiographic subregions, the Chinchaga Plain and High Level Plain on the basis of bedrock geology, relief and surficial materials.

The entire region is underlain by a thick sequence of marine shales of Lower Cretaceous age. Soft, black fissile shales of the Lower Shaftesbury Formation (Figure 2.2) underlie the Chinchaga Plain. These shales are not as erodible as the shales of the Upper Shaftesbury Formation. The Loon River Formation (Figure 2.2) underlies the High Level Plain and extends from the Keg River southward into the basin-like area between Naylor and Hawk hills. This formation is comprised of dark gray, fossiliferous silty shales and laminated siltstones with thin beds of concretionary ironstone (Green 1972).

Lower Cretaceous bedrock is overlain by nearly level to gently undulating glaciolacustrine and till deposits which are drained by the Keg, Kemp, Haro and Chinchaga rivers. Extensive wetland areas are present west of the Haro River and in the basin-like area between Naylor and Hawk hills.

2.2 Quaternary History and Surficial Materials

The quaternary history of the Keg River study area has not been studied in any great detail; however, several works are applicable to this particular area. These include works by Gravenor and Meneley (1958), Lindsay and others (1959), Taylor (1960), Gravenor and Bayrock (1961) and most recently, Mathews (1980).

The last ice advanced across the area some 24 000 years B.P. (Lindsay et al. 1959) in a south-southwest direction. This is shown by the direction of fluting marks in the vicinity of Twin Lakes (Gravenor and Meneley 1958). The till laid down by continental ice sheets is rich in clay derived from the erosion of dark Cretaceous shales. The stone content of these till deposits is highly variable and generally consists of pebbles and cobbles of granite from the Canadian Shield and sandstones from the erosion of the Dunvegan and Kaskapau formations atop the Clear Hills Upland.

Ice covered much of the Keg River study area until about 11 000 to 10 000 years B.P. (Mathews 1980). The presence of ground moraine and the absence of end or recessional moraines suggests that much of the retreat of the ice sheets was accomplished by stagnation. As ice sheets stagnated, meltwaters ponded between the ice sheets to the north and east and the Clear Hills Upland to the south and west. This ponding resulted in the formation of the later stages of Glacial Lake Peace. Mathews (1980) has referred to these stages as Late Clayhurst, Indian Creek and Keg River. Taylor (1960) has speculated that Glacial Lake Peace and Glacial Lake Tyrrell converged in this area during the later stages of Glacial Lake Peace. This resulted in the sequential deposition of clay-rich glaciolacustrine sediments of variable thicknesses over much of the Fort Vermilion and Peace River lowlands. Ice rafting may account for the variable stone content found within these sediments (Lindsay, et al. 1959). These lakes were relatively short-lived as indicated by the lack of shoreline features.

Termination of the Indian Creek stage of Glacial Lake Peace occurred because of the outflow of waters in a westerly direction around the north end of the Naylor Hills into the present day Chinchaga drainage system (Mathews 1980). This, combined with the continued runoff of meltwaters from ice covering the Clear Hills Upland, resulted in the formation of entrenched glacial meltwater channels and the deposition of glaciofluvial materials.

Extensive alluvial deposits are found adjacent to the Chinchaga and Keg rivers. These deposits are attributed to the strongly meandering characteristics of both rivers.

Infilling of depressional areas and small lakes by organic materials and pronounced seepage have resulted in vast expanses of wetland, especially within the Fort Vermilion Lowland, and to a lesser extent atop the Clear Hills Upland.

Colluvial materials are common along the steep valley walls of the Meikle River and along the scarp face of the Naylor Hills. Downcutting and slumping within these areas are directly related to the presence of the highly erodible Upper Shaftesbury Formation.

2.3 Climate

Climate of the Keg River study area is considered to be the limiting factor to agricultural expansion. The climate of the area is best described as boreal, characterized by long, cold winters with little precipitation and short but warm summers with a precipitation maximum during July. Continental Arctic air masses dominate during the winter while more southerly or Pacific air masses dominate during the summer months (Dutchak 1979). Sanderson (1948) described the area as having a semi-arid type of climate.

Climate stations are grouped by physiographic regions for this study. Fourteen stations were selected for the analysis; 12 of these are operated by the Atmospheric Environment Services of Environment Canada, and the other two are short-term (1979-1983) stations operated by the Resource Information Services of Alberta Energy and Natural Resources. Temperature, precipitation and derivatives of these measurements are given for each of the 14 stations in Table 2.

2.3.1 Temperature

Daily temperature records for the entire year are incomplete for all but three of the 14 stations; however, daily temperature records are available for all stations for the May to September period. Table 3 gives the daily maximum and minimum temperatures for the Clear Hills Upland and the Fort Vermilion and Peace River lowlands. The Fort Vermilion and Peace River lowlands exhibit warmer daily maximum and cooler daily minimum temperatures than the Clear Hills Upland. The narrow range in daily temperature fluctuations for the Clear Hills Upland is attributed to cold air drainage and elevation.

2.3.2 Frost-Free Period

Cold air drainage also has a significant influence on the frost-free period for the different physiographic regions. It can be seen from Table 4 that there is a higher probability of frost occurring later in the spring and earlier in the fall in the Fort Vermilion and Peace River lowlands than in the Clear Hills Upland. This results in a lower number of days with minimum temperatures above 0°C (frost-free period) for the Fort Vermilion and Peace River lowlands (51-86 days) compared to 84 to 103 days for the Clear Hills Upland (Table 2). The large variation in the frost-free period for the Fort Vermilion and the Peace River Lowlands (51-86 days) may be explained by the location of the Kemp and Keg River R.S. stations. The low frost-free period for the Kemp station (51 days) may be explained by its proximity to the Naylor Hills combined with extensive wetlands that act as ponding areas for cold air drainage, especially during the spring. Similarily, the

Table 2

SELECTED CLIMATIC PARAMETERS FOR SELECTED CLIMATIC STATIONS IN THE VICINITY OF THE KEG RIVER STUDY AREA

Climate Station	Elevation (m)	Mean Daily Jan. Temp.[a] (°C)	Mean Daily July Temp.[a] (°C)	Frost Free Period[b] (30 yr pd)	Growing Degree Days[c] (May to Sept)	Total Precipitation[a] (mm)	May to September Precipitation[a] (mm)
Clear Hills Upland							
Keg LO+	914	M	13.8	84	M	M	369.0
Naylor Hills LO+	732	M	14.9	102	1061.2	M	311.5
Hawk Hills+	610	M	15.0	103	1095.7	M	358.2
Battle River LO+	732	M	15.0	100	1101.7	M	299.8
Chinchaga LO+	762	M	14.2	92	976.8	M	298.1
Notikewin LO+	762	M	14.3	99	982.3	M	326.8
Hotchkiss LO+	945	M	13.7	86	889.5	M	388.1
Fort Vermilion Lowlands							
Keg River+	427	-22.6	15.7	70	1160.0	443.8	282.1
Keg River RS+	405	M	14.9	54	1117.9	M	256.4
High Level RS+	338	-24.6	15.7	71	1130.9	386.7	249.3
Kemp*	465	M	16.0	51	1062.6	M	250.4
Petromark*	466	M	16.0	82	1179.0	M	229.0
Peace River Lowlands							
Notikewin East+	465	-22.6	15.8	86	1158.0	404.1	245.9
Manning RS+	460	M	16.3	81	1236.5	M	256.6

LO - Lookout, RS - Ranger Station, M - Missing
* Resource Evaluation and Planning Division Climate Stations (1979-1983)
+ Atmospheric Environmnent Stations

Sources:

[a] Atmospheric Environment Services. 1982. Canadian Climate Normals, Temperature and Precipitation, 1951-1980. Environment Canada
[b] Atmospheric Environment Services. 1982. Canadian Climate Normals, Frost, 1951-1980. Environment Canada.
[c] Atmospheric Environment Services. 1982. Canadian Climate Normals, Degree Days, 1951-1980. Environment Canada.

Table 3

AVERAGE DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE CLEAR HILLS UPLAND AND THE FORT VERMILION AND PEACE RIVER LOWLANDS FOR THE MAY TO SEPTEMBER PERIOD IN °C

	May	June	July	August	September
Clear Hills Upland					
Daily Maximum	13.6	17.4	19.3	17.8	12.3
Daily Minimum	2.9	7.2	9.4	8.1	3.2
Range	9.7	10.2	9.9	9.7	9.1
Fort Vermilion and Peace River Lowlands					
Daily Maximum	17.2	21.0	22.9	21.3	15.7
Daily Minimum	1.5	6.0	8.4	6.7	1.7
Range	15.7	15.0	14.5	14.6	14.0

SOURCE: Atmospheric Environment Services. 1982. Canadian Climate Normals, Temperature and Precipitation, 1951-1980. Environment Canada.

Table 4

SPRING AND FALL FROST PROBABILITIES FOR THE CLEAR HILLS UPLAND AND THE FORT VERMILION AND PEACE RIVER LOWLANDS

	Frost Probabilities					
	Spring			Fall		
	10%	50%	90%	10%	50%	90%
Clear Hills Upland	2nd week of June	1st week of June	3rd week of May	3rd week of August[a]	1st week of September	4th week of September
Fort Vermilion and Peace River lowlands	1st week of July	2nd week of June	4th week of May	1st week of August[a]	3rd week of August[a]	1st week of September

SOURCE: [a]Can vary one week depending on site location
Atmospheric Environment Service. 1982. Canadian Climate Normals, Frost, 1951-1980. Environment Canada.

Similarily, the Keg River Ranger Station is located in the Keg River valley and is subject to cold air drainage especially during late spring. The latest recorded spring frost for Keg River R.S. occurred on July 11th.

2.3.3 Growing Degree Days

Growing degree days (GDD) are a cumulative measure of the number of degrees by which the daily mean temperature is in excess of 5.0°C for each day of the growing season. This concept has been used to determine areas in which a particular crop is likely to mature. Values for the May to September period are given in Table 2. Growing season length is a major limitation to agricultural production, but the increased photo period in the Peace River country compensates for the lower number of days (Harris et al. 1972).

Problems arise with the application of the GDD concept in the Keg River study area. For example, Agriculture Canada (1982) publications state that certain barley varieties require 1 300 to 1 800 GDD to mature, yet these varieties mature well within the Fort Vermilion and Peace River lowlands where less than 1 200 GDD are available. A modification of the GDD concept has been used with some success in the Peace River region of British Columbia. It uses a sunlight factor that increases the GDD by a factor of 10 to 20% (Cheesman, 1982). This modification may account for crops maturing faster in the Keg River area than in Beaverlodge (Mills 1984). Table 5 gives the adjusted values for the study area. A value of 13.5 per cent was arbitrarily chosen based on latitude and sunlight hours. When the

GDD are adjusted by 13.5 per cent, all stations within the Fort Vermilion and Peace River lowlands except Kemp, Keg River R.S. and High Level R.S. have GDD in excess of 1 300. No stations within the Clear Hills Upland have values exceeding 1 250. Using this adjustment to account for additional daylight, it may be said that the Fort Vermilion and Peace River lowlands receive adequate heat units (GDD) for the production of certain cereals such as barley. However, values for the Clear Hills Upland, even when adjusted, do not obtain the minimum GDD required for annual cereal crop production.

Faster-maturing varieties of barley, canola, wheat and oats have been developed that are more suitable for northern areas. Table 6 gives the atmospheric requirements for particular crops common to the Keg River study area. By comparing Table 5 and Table 6, it is apparent that these shorter season crops may be grown not only within the Fort Vermilion and Peace River lowlands, but also within the Clear Hills Upland. However, the major problem with the Clear Hills Upland is the high probability of an interruptionn in the period of time required for the maturation of the crops listed. In other words, there is a higher probability of damaging frost occurring with the Clear Hills Upland.

It may also be noted, however, that GDD are not strictly comparable between lowlands and uplands as the two are different in heat "quality." Lowlands have low minimum and high maximum temperatures while uplands have high minimum and low maximum temperatures. The GDD concept does not cover this problem very well

Table 5

ADJUSTED GROWING DEGREE DAYS (MAY TO SEPTEMBER) FOR THE KEG RIVER STUDY AREA

	Growing Degree Days May to September Unadjusted	Adjusted Growing Degree Days, May to September (13.5%)
Clear Hills Upland		
Keg LO	M	M
Naylor Hills LO	1 061.2	1 204.5
Hawk Hills	1 095.7	1 243.5
Battle River LO	1 101.7	1 250.4
Chinchaga LO	976.8	1 108.7
Notikewin LO	982.3	1 114.9
Hotchkiss LO	889.5	1 009.6
Fort Vermilion and Peace River Lowlands		
Keg River	1 160.0	1 316.6
Keg River R.S.	1 117.9	1 268.8
High Level R.S.	1 130.9	1 283.5
Kemp	1 062.6	1 206.1
Petromark	1 179.0	1 338.2
Notikewin East	1 158.0	1 314.3
Manning	1 236.5	1 403.4

M - Missing, LO - Lookout, R.S. - Ranger Station

Table 6

CROP REQUIREMENTS

Crop	Days to Maturity	Growing Degree Days
Barley	85- 90	860- 920
Wheat	90-100	1 040-1 100
Canola	73-115	860-1 100
Oats	83- 95	900-1 000

SOURCE: Alberta Agriculture, 1985. Canola Production in Alberta.

Alberta Agriculture, Field Crops Branch, AGDEX 149/20-1.

Alberta Agriculture, 1984. Barley Production in Alberta.

Alberta Agriculture. AGDEX 114/20-1.

(S. Dupuis, Alberta Energy and Natural Resources, February 1985, personal communication).

2.3.4 Precipitation

The precipitation of the Keg River study area has been described as highly variable by Elliot (1974), Reeder and Odynsky (1969) and Maxwell (1964). Yearly precipitation totals are only available for three of the 14; however, May to September totals are available for all stations. These totals are given in Table 2.

The May to September precipitation for the Clear Hills Upland ranges from 300 to 390 mm while the May to September precipitation for the Fort Vermilion and Peace River lowlands ranges from 230 to 280 mm, an average difference of over 80 mm between the upland and lowland areas. Precipitation may occur in a steady rainfall over a few days or it may occur as showers every day of the entire summer. This is particularly true of the Keg River area where convective type showers develop over the Naylor Hills.

2.3.5 Evapotranspiration

The loss of water through evapotranspiration is an important climatic factor that must be addressed for agricultural expansion. Evapotranspiration represents the combined water loss through evaporation from the soil and the transpiration from growing plants (Dunlop 1984).

Potential evapotranspiration rates have been calculated for half of the stations by Dupuis (1984) using the Baier and Robertson (1956) method. The values given in Table 7 suggest that the Fort Vermilion Lowland experiences a moisture deficit during the May to September period. There appears to be less of a moisture deficit in the Clear Hills Upland although the figures are too variable to indicate more than a trend. Early estimates of potential evapotranspiration by Sanderson (1948) show moisture deficits for the area in the order of 150 mm. It appears reasonable to conclude that the May to September precipitation is a limiting factor to agriculture in the Fort Vermilion Lowland region. It must be remembered, however, that soil texture plays a large role in moisture surpluses and deficits.

Another measure of water availability useful in agricultural analysis is the Aridity Index (Bothe and Ames 1984); this index indicates the relative wetness and dryness of an area. A high aridity index indicates that the area has a comparatively large water shortage and that a significant increase in water supply is necessary to improve soil moisture conditions. A low aridity index indicates a comparatively small water shortage, while an aridity index of zero indicates that water supply is not a limiting factor. The aridity index is calculated by using various measures of evapotranspiration. Average aridity indexes for the May to September period have been calculated for various stations within the Peace River region of Alberta and are presented in Table 8. It would appear from Table 8 that although the Keg River area experiences a moisture deficit during the May to September period, it has a much more favorable moisture situation than other areas within the Peace River region of Alberta.

2.4 Soils

Soils are a reflection of the interaction between parent materials, climate and biota over time. Various works relevant to the area include those by Wyatt and Leahy (1929), Lindsay and others (1959), Reeder and Odynsky (1969), Lindsay and Odynsky (1965) and Brown (1967), the latter two deal entirely with the occurrence of permafrost in organic soils.

Table 7

POTENTIAL EVAPOTRANSPIRATION[a] OF SELECTED CLIMATIC STATIONS IN THE KEG RIVER STUDY AREA

Climate Station	May to Sept. Precipitation (mm)	Potential Evapotranspiration (mm)	Moisture Surplus (+) or Deficit (-) (mm)
Clear Hills Upland			
Keg LO	369.0	307.8	- 61.2
Hawk Hills	358.2	356.6	+ 1.6
Battle River LO	299.8	389.6	- 89.8
Fort Vermilion Lowlands			
Keg River	282.1	497.3	- 215.2
High Level R.S.	249.3	474.6	- 225.5
Kemp	250.4	495.0	- 244.6
Petromark	229.0	449.6	- 220.6

---

[a] Baier and Robertson (1956) method using 1979 to 1983 data

Table 8

AVERAGE ARIDITY INDEXES[a] FOR SELECTED CLIMATIC STATIONS WITHIN THE PEACE RIVER REGION

	Average Aridity Index					
Climate Station	May	June	July	August	Sept.	Average Aridity Index
Peace River[b]	54	49	40	35	23	40.2
Fairview[c]	49	43	39	36	26	38.6
Keg River[d]	33	28	26	29	20	27.2
High Level[e]	56	46	40	32	19	38.6
Fort Vermilion[f]	62	48	39	37	18	40.8

---

[b] Calculations derived from Bothe and Ames (1984)
[c] 1959 to 1982
[d] 1932 to 1982
[e] 1935 to 1957
[f] 1972 to 1982
[g] 1963 to 1982

2.4.1 Peace River Lowland

Moderately well drained Orthic and Solonetzic Gray Luvisols (Plate 3) and Dark Gray Solods (Plate 4) which have developed on non stony to very slightly stony glaciolacustrine and lacustrotill deposits are typical of the Peace River Lowland. Poorly drained Orthic Luvic Gleysols (Plate 5) occur locally across the landscape. Imperfectly to poorly drained soils are not as common in the Peace River Lowland as in the Fort Vermilion Lowland because of the gently sloping topography.

The A horizons of soils of the Peace River Lowland vary in depth from 7 to 28 cm while textures range mostly from loams to silt loams. The A horizons are generally extremely to slightly acidic (pHs of 4.5 to 6.5). The B horizons are characterized by firm to extremely firm columnar structures and vary in texture from silty clays to clay. Their pHs range from moderately acid to moderately alkaline (5.5 to 8.0).

2.4.2 Clear Hills Upland

Soil development within the Clear Hills Upland is closely tied to surficial materials. Imperfectly drained Gleyed Solonetzic Gray Luvisols predominate on lower slopes where lacustrotill and till deposits occur. These are non stony to slightly stony with A horizons ranging from 4 to 16 cm in depth. The B horizons are characterized by very to extremely firm columnar structures. Textures vary from silt loams to clay loams in the A horizons and clay loams to clay in the B horizons. The pH of the A horizon varies from moderately acid to neutral (5.5 to 7.0) while slightly acid to moderately alkaline (6.0 to 8.0) levels are more common in the B horizon.

On upland sites where till, residual, glaciofluvial and colluvial materials are found, pedogenic processes are poorly developed. Moderately well to well drained Eluviated Brunisols and Brunisolic Gray Luvisols are typical of the higher elevation in the Clear Hills Upland. Eluviated Eutric Brunisols have developed on moderately acid to neutral (5.5 to 7.0) glaciofluvial sands and loamy sands. On colluvial materials, Eluviated Dystric Brunisols (Plate 6) have developed where acid shales of the Kaskapau Formation are near the surface. Where the Kaskapau Formation is absent, Eluviated Eutric Brunisols are found. The texture of these colluvial materials is generally sandy loam. On gentler slopes where till and residual materials predominate, Brunisolic Gray Luvisols and Eluviated Dystric Brunisols are common. Textures vary from loam to clay loam while pHs range from extremely to slightly acid (4.0 to 6.0) depending upon the closeness of the Kaskapau Formation to the surface.

Extensive wetland areas are found in association with glaciofluvial deposits south of Twin Lakes. Fibrisols and Mesisols are found in association with Rego Gleysols. Extensive peat plateaus occur immediately west of the study area in the Clear Hills Upland.

2.4.3 Fort Vermilion Lowland

Within the Fort Vermilion Lowland, pedological processes have been strongly influenced by fine textured materials, level topography, seepage from the adjacent Clear Hills Upland and the effects of ponding by beavers. The above factors have resulted in the development of widespread wetlands between areas of moderately well to poorly drained topography. Low permeability and high soil moisture have resulted in the formation of perched water tables and encouraged the development of imperfectly drained Gleyed Gray Luvisols and poorly drained Orthic Luvic Gleysols across most of the landscape. Orthic, Solonetzic and Dark Gray Luvisols occur on better drained topography but are localized. Poorly drained Rego and Humic Gleysols and very poorly drained Terric Fibric Mesisols are typical of wetland areas. Permafrost was occasionally observed in organic soils north and west of Keg River. Ice contact was common between 35 and 50 cm in July and August (Brown 1967). Soils on fluvial deposits vary from Cumulic and Gleyed Cumulic Regosols to Orthic Gleysols while textures range from sand to silty clay loams.

The textures of the mineral soils vary from loam to clay loam in the A horizons and silty clays to heavy clays in the B horizons. The depth of the A horizons vary from 5 to 24 cm. On moderately well to imperfectly drained till deposits, the pHs of the A and B horizons vary from extremely to moderately acid (4.5 to 6.0), while moderately well to imperfectly drained glaciolacustrine materials are strongly acid to neutral (5.0 to 7.0) in the A horizon and slightly acid to moderately alkaline (6.0 to 8.0) in the B horizon. Neutral to moderately alkaline (7.0 to 8.0) conditions prevail in groundwater discharge areas.

2.5 Vegetation

The native vegetation of the Keg River study area is a mosaic of deciduous, coniferous and mixed forests typical of the Boreal Mixedwood Ecoregion along with scattered shrubland and grassland communities. In recent years, a significant portion of the native vegetation in the Hawk Hills and Keg River has been cleared and cultivated for annual cereal crops, forage and oilseed production.

Although no detailed vegetation surveys were made previously in the study area, several regional investigations incorporate data from the Keg River area. These include studies by Groh (1949), Moss (1952, 1953a, 1953b), LaRoi (1967) and Achuff and LaRoi (1977). Detailed information and statistical analysis of the vegetation of the study area is found in Volume II.

Aspen forests on various parent materials predominate in the study area. Forests within the Fort Vermilion and Peace River lowlands are on average less than 50 years old and primarily reflect the occurrence of frequent fires. Atop the Clear Hills Upland where fire is not as frequent because of cooler and moister conditions, aspen forests are somewhat older on average (>65 years) and are commonly found in association with white spruce. Where groundwater seepage is pronounced or the water table is near the surface, balsam poplar becomes a significant component of aspen stands and may occur as pure stands, especially along river valleys. Understory vegetation is highly variable due to microenvironmental differences and stand history; low-bush cranberry, rose and buffalo-berry are typical shrubs found throughout the area under aspen canopies.

White spruce forests are most common atop the Clear Hills Upland where cooler and moister conditions prevail and fire frequency is lower. Aspen and, to a lesser extent, balsam fir occur as codominant species within these stands. Understories are poorly developed compared to aspen stands, but generally include low-bush cranberry, rose and feathermosses. Relic white spruce stands are found throughout the Peace River and Fort Vermilion lowlands, usually at the base of the Clear Hills Upland. These forests have developed on a variety of surficial materials, including glaciolacustrine, lacustrotill, till, residuum and colluvium.

Lodgepole pine forests also occur atop the Clear Hills Upland, but are areally less extensive than white spruce and aspen. Aspen or black spruce are often codominant within these stands which have mainly developed on glaciofluvial and till deposits. These stands have variable understories of alder, labrador tea, blueberry, bog cranberry and feathermosses.

Black spruce is associated with wetland topography throughout the study area. Spruce growth is often suppressed especially within organic soils; however, on mineral soils, growth is better. Larch, labrador tea, sphagnum mosses and feathermosses are commonly associated species.

Willow shrubland communities and sedge meadows are also associated with wetland topography. Willow communities have generally developed where organic veneers overlie mineral soils, especially throughout the Fort Vermilion Lowlands and at the base of the Clear Hills Upland. Sedge meadows are not extensive but are generally associated with deep organic soils that have developed within glacial meltwater channels, and in the wettest areas within willow shrubland communites.

Early works by Wyatt and Leahey (1929), Groh (1949) and Moss (1953a) have indicated that native grasslands existed in the vicinity of the Keg River and extended in a northeast direction towards Paddle Prairie along the Boyer River. These grasslands (Brick 1985) were cultivated by early settlers during the 1930s. Small relic grasslands exist today along the steepest south facing slope of the Meikle River.

2.6 Hydrology

Drainage within the Keg River study area is provided by tributaries to the Peace and Hay river basins. Both of these drainage basins form part of the larger MacKenzie River system which flows into the Arctic Ocean. For the purpose of this discussion, the study area will be broken into four separate subdivisions and one residual basin of the Peace River (Figure 2.6).

1. Notikewin River subdivision
2. Keg River subdivision

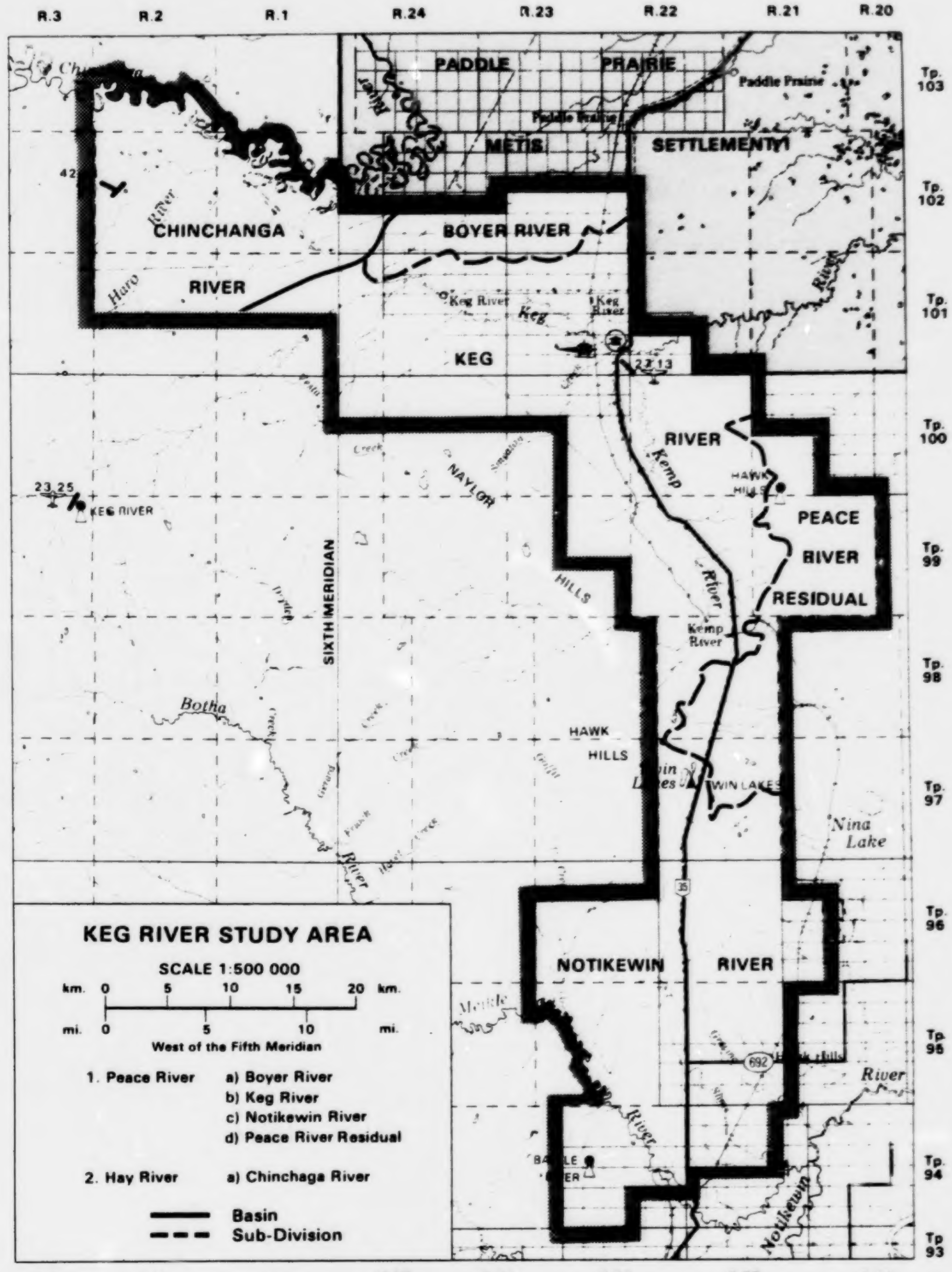

R.3
R.2
R.1
R.24
R.23
R.22
R.21
R.20
Tp. 103
Tp. 102
Tp. 101
Tp. 100
Tp. 99
Tp. 98
Tp. 97
Tp. 96
Tp. 95
Tp. 94
Tp 93
PADDLE PRAIRIE METIS SETTLEMENT
Paddle Prairie
CHINCHANGA RIVER
BOYER RIVER
KEG RIVER
Keg River
Keg
NAYLOR HILLS
HAWK HILLS
PEACE RIVER RESIDUAL
Kemp River
Twin Lakes
TWIN LAKES
Nina Lake
SIXTH MERIDIAN
Botha
Haro River
NOTIKEWIN RIVER
Notikewin
BATTLE RIVER
KEG RIVER
23,25
23,13
42
35
692
KEG RIVER STUDY AREA
SCALE 1:500 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
1. Peace River
a) Boyer River
b) Keg River
c) Notikewin River
d) Peace River Residual
2. Hay River
a) Chinchaga River
Basin
Sub-Division
R.25

Figure 2.6 DRAINAGE BASINS

3. Peace River residual
4. Boyer River subdivision
5. Chinchaga River subdivision

The Notikewin, Keg and Boyer River subdivisions and the Peace River residual form part of the larger Peace River drainage basin, while the Chinchaga subdivision forms part of the larger Hay River basin.

2.6.1 Notikewin Subdivision

The Notikewin River subdivision drains the area south of Twin Lakes and accounts for approximately 35 per cent of the Peace River drainage basin that occurs within the study area. The major water courses belonging to the Notikewin River subdivision include the Meikle River and Goffit, Slims and Gravina creeks. All have their origins in the Clear Hills Upland and flow in a south-southwest direction across the Peace River Lowland. The flood response of these streams is relatively slow as the sources of these water courses are large organic wetland areas. Also, all stream courses are actively downcutting into the easily erodible Upper Shaftsbury Formation. Goffit, Slims and Gravina Creeks all occupy meltwater channels while the Meikle River flows through a large postglacial valley. No information is available for discharge or surface water quality.

2.6.2 Keg River Subdivision

The Keg River subdivision includes the upland area north of Twin Lakes and west of the Hawk Hills and accounts for approximately 35 per cent of the Peace River drainage basin that drains the study area. Primary stream courses within the Keg River subdivision include the Keg and Kemp rivers along with Smeaton and Vesta creeks. All these stream courses originate atop the Clear Hills Upland and flow in a north-northeast direction across the Fort Vermilion Lowland. Both headwater and downstream reaches of these streams are in the study area. The headwater reaches are characterized by deeply entrenched stream courses with fast flood response, whereas downstream reaches are characterized by gently meandering courses. Maximum monthly discharge rates for Keg River (Water Survey of Canada Station No. 07HF002) occur during May, and minimum monthly discharge rates occur in February (Water Survey of Canada 1983). It is speculated that the maximum monthly discharge rates for the other streams within this watershed occur either in late April or early May. No water quality information is available.

2.6.3 Peace River Residual

Several small unnamed tributary streams of the Peace River drain the eastern slopes of the Hawk Hills. These streams are incised and originate in gently sloping wetland areas.

2.6.4 Boyer River Subdivision

The Boyer River subdivision drains the northeastern corner of the study area and accounts for approximately 10 percent of the portion of the Peace River drainage basin that occurs within the study area. It drains the Fort Vermilion Lowland in a northeast direction.

Because of the low relief ratio and low stream gradient, storm response is rather slow. Maximum monthly discharge rates for the Boyer River (at Fort Vermilion, Water Survey of Canada Station No. 07JF002) occur during May, and minimum monthly discharge rates occur during January (Water Survey of Canada 1983). No data are available for surface water quality.

2.6.5 Chinchaga River Subdivision

The Chinchaga River subdivision occurs in the northwestern corner of the study area and drains the north and northwest facing slopes of the Naylor Hills and the gently rolling terrain of the Fort Vermilion Lowland. The Chinchaga River has carved a broad, actively meandering channel with numerous relic oxbows and meander scars. The main tributary stream of the Chinchaga River within the study area is the Haro River which originates atop the Naylor Hills where it actively downcuts through the Upper Shaftsbury Formation. Where it flows onto the Fort Vermilion Lowland it starts to meander gently. Storm response is high within the headwaters of Haro River while it is rather slow for both the Chinchaga and downstream reaches of Haro River. The slow storm responses are mainly attributable to low relief and low stream gradient combined with the vast expanses of wetland topography that occur within the watershed. Maximum monthly discharge rates for the Chinchaga River occur in May (near High Level, Water Survey of Canada Station No. 07OC001), and minimum monthly discharge rates occur in March (Water Survey of Canada 1983). No data are available for surface water quality.

2.7 Wildlife and Fisheries

The diverse nature of the Keg River study area provides suitable habitat for ungulates, furbearers, big game species, upland game birds and fishery resources. No detailed surveys have been undertaken to examine the populations, densities and health of these species.

Key ungulate species include moose and mule deer. Moose prefer river and creek valleys and southwest facing slopes for fall and winter habitat, and wetlands with open willow communities or stands with a high portion of willow in the understory for spring and summer habitat. Population densities range from less than one moose per square mile to a high of over six moose per square mile (K. Moller, Alberta Energy and Natural Resources, February 1985, personal communication). Wintering areas for mule deer include uncultivated land in fringe agricultural areas near steep terrain and areas with heavy conifer cover interspersed with clearings or deciduous forests with well developed shrub understories.

Grizzly and black bear are the only other big game species in the area. Early spring habitat for grizzly bear includes open south and west facing slopes, especially where there is a lush legume understory. Key grizzly bear habitat has been identified immediately west of the study area along the Chinchaga River by Alberta Fish and Wildlife (1983).

Major furbearers include beaver, coyote, fisher, lynx, marten, muskrat, weasel and squirrel. Other furbearers include black bear, fox, wolf and wolverine. With the exception of beaver, coyote and muskrat, furbearers prefer mature conifer cover. Beaver and muskrat prefer riparian areas while coyote is more common in fringe agricultural areas.

Upland game birds include ruffed, spruce and sharp-tail grouse. Ruffed grouse prefer aspen communities with willow understories while spruce grouse are usually found in areas where pine and pine-aspen communities have developed. Sharp-tailed grouse prefer open areas with scattered brush, including agricultural lands which are not intensively cultivated. They also prefer wetland areas dominated by willow, grasses and sedges and river banks with grass/shrub mixes.

Major sport fishery species include pike, walleye and arctic grayling. These species are found in the Chinchaga, Meikle, Keg and Kemp rivers.

3. METHODS

This section discusses the three systematic approaches used in classifying the different components of the landscape to produce an integrated resource inventory. An integrated resource inventory includes the collection and analysis of natural resource data with the intent of providing an overall synthesis of the landscape features for the purpose of natural resource management. The three approaches used in obtaining this landscape synthesis include Physical Land Classification, Vegetation Inventory and Ecological Land Classification. Each approach will be discussed individually along with the linkages between the three different approaches that were used to obtain this synthesis. Also, evaluation methods are outlined for till cropping, forestry and wildlife (moose and mule deer).

3.1 Physical Land Classification

The Physical Land Classification (PLC) methodology (Land Classification Group 1977), provides guidelines for the systematic delineation of land areas based on the geomorphic nature of the earth's surface along with an understanding of structure, genesis and process as reflected in the landforms, parent material, soils and topography.

The classification includes four categories or hierarchical levels.

Physiographic Region. This is the broadest category, and is defined on the basis of elevation, relief and patterns of bedrock and structural geology. It is mapped at a scale of 1:3 000 000 (1 cm to 30 km) to 1:1 000 000 (1 cm to 10 km).

Physiographic Subregion. This level is a subdivision of the physiographic region, with definite patterns of relief, geology, geomorphology and drainage pattern and density. It is mapped at a scale of 1:1 000 000 to 1:250 000 (1 cm to 2.5 km).

Geomorphic System. This level accounts for the component parts of the physiographic subregions, distinguished by recurring patterns of landform, including parent material and surface expression components. It is mapped at a scale of 1:250 000 to 1:50 000 (1 cm to 0.5 km).

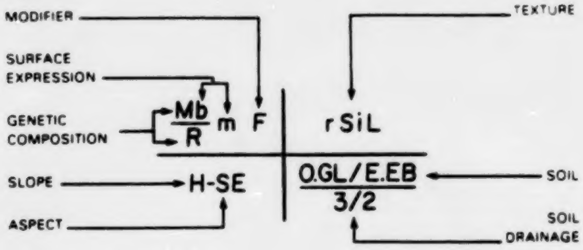
Geomorphic Unit. The fourth level is a subdivision of the geomorphic system into relatively homogeneous areas of surface expression, parent material, mode of deposition, soils, texture, drainage, slope and aspect. It may be mapped at a scale of 1:50 000 to 1:5 000 (1 cm to .05 km)..

The physiographic region, physiographic subregion, geomorphic system and geomorphic unit are all detailed on the Physical Land Classification maps at a scale of 1:50 000. A typical geomorphic unit map symbol is explained in Figure 3.1.

3.2 Vegetation Inventory

Vegetation Inventory employs three levels of classification to describe vegetation: ecoregion, plant associations and plant community.

SYMBOLIZATION



Symbols of Proportion (=)

The relative proportions of the two-term components are approximately

50-52% = 45-50% (approximately equal)
55-70% / 30-45% (more than)
70-90% // 10-30% (considerably more than)

*Symbols of proportion do not necessarily correspond in all four quadrants of the symbolization. Where no symbol of proportion is present between two surface expressions, it implies that both surfaces are coincidental.

Stratigraphic Symbol (——)

The symbol indicates one material overlying another with the overlying material being either a blanket or veneer

$\frac{Mb}{R}$ m	A morainal blanket overlies bedrock with an overall rolling surface expression
F	The genetic material is failing
rSiL	The texture is a rubbly silt loam
O GL E EB	The soils are mainly Orthic Gray Luvisols with significant sections of Eluviated Eutric Brunisols
3 2	The soil drainage is mainly moderately well drained with significant sections of well drained areas
H-SE	Slopes of 46-70% with a south east aspect

Line Symbolization

Physiographic Region Boundary	━━━━━━
Physiographic Subregion Boundary	━━ ━━ ━━
Geomorphic System Boundary	──────
Geomorphic Unit Boundary	— — — —

Figure 3.1 Physical Land Classification Geomorphic Unit Symbol.

The plant community is a site specific indication of environmental conditions and stand history as expressed by vegetation. Plant communities with similar vegetation and environmental relationships are grouped into associations. These associations are subsequently grouped by characteristic suites of species reflecting climatic influence to define ecoregion concepts.

Plant associations are not mapped individually; however, the dominant plant associations within each ecosection are identified in the description of mapped landscapes (Section 5).

3.3 Ecological Land Classification

The main emphasis of ecological analysis is to subdivide and classify the land surface into areas of similar environments. These areas are most likely to have equal or similar biological potential. This is very important in evaluating land use for agriculture, forestry and wildlife.

Mapping scales dictate the degree of variability tolerated within any designated area. Thus one must assume a certain degree of variability within this type of classification.

A three-tiered hierarchical approach to Ecological Land Classification after D. Lacate's 1969 work is used in this report. The hierarchy is composed of the following elements:

Ecoregion. This is the broadest category and is defined as an area characterized by a distinct regional climate as expressed by vegetation. It is usually mapped at a scale of 1:1 000 000 to 1:3 000 000. In this study the main application of the ecoregion concept is in the definition and grouping of vegetation associations.

Ecodistrict. The ecodistrict is a subdivision of the Physical Land Classification physiographic region. It is defined on the basis of definite patterns of relief, geology, geomorphology and drainage pattern and density. It is mapped at scales of 1:1 000 000 to 1:250 000.

Ecosection. The ecosection is the basic unit of classification and represents a further subdivision of the ecodistrict. It is characterized by recurring patterns of slope, landform, soils and vegetation. Ecosections are mapped at a scale of 1:250 000 to 1:100 000.

The ecodistrict and ecosection levels of classification are depicted on the 1:100 000 Ecological Land Classification map. Ecoregions are not depicted on the map because the entire Keg River study area occurs within what has been classified as the Boreal Mixedwood ecoregion (Archibald 1985).

The map symbols for the ecodistrict and ecosections are of a closed legend format. An example is as follows:

CHU.M2, where:

CHU	represents the ecodistrict (ELC) or the physiographic subregion(PLC); Clear Hills Upland
M	represents the material modifier; moraine
2	represents the particular ecosection

3.4 Fluvial Classification

Fluvial ecosections often transcend physiographic regions and subregions with no apparent changes in their stream characteristics or morphology. It is for this reason that fluvial ecosections have been delineated, classified and mapped independently of physiographic regions and subregions. Also, it is easier to evaluate these landscapes in terms of suitability ratings if treated as independent, linear features. Ecosections have been delineated and classified on the basis of valley form, channel morphology, slope and substrate materials.

3.5 Integration/Linkages

The physical land, vegetation, ecological and fluvial classifications have been discussed separately in Sections 3.1-3.4. However, at various levels of classification, information is integrated and may be included in more than one inventory. For example, the plant associations and corresponding ecological conditions defined in the vegetation inventory have been used to characterize the ecosections developed in the ELC.

For the purpose of this study two levels of the ELC and PLC hierarchy use a common map base. The physiographic subregion boundaries are the same as the ecodistrict boundaries, and the geomorphic system delineations are the same as those for ecosections. The ecoregions and physiographic regions are based on different concepts and so are not mapped as the same unit. The rationale for this is that while the vegetation and climate, which define ecoregion, with major physiographic differences, they do not correspond exactly to divisions at the physiographic region level. The geomorphic unit is presented on PLC maps as a further subdivision of the geomorphic system to provide greater detail which is useful for more site specific planning and operational management decisions.

3.6 Data Collection and Analysis

A preliminary interpretation of the study area was conducted before the field season using 1:50 000 (1979) and 1:60 000 (1981-82) black and white panchromatic photos acquired respectively in 1979 and 1981-82. Preliminary lines were transferred to 1:50 000 NTS map sheets to provide a base for field sampling.

The purpose of the field season was to ground truth the initial interpretation and to collect quantitative information on the natural resources of the area. Areas to be sampled were originally selected by using aerial photographs in conjunction with the preliminary maps. The actual site locations were chosen to represent a certain set of homogeneous environmental conditions. The appropriate selection of these sites was critical to the subsequent classifiation. A 10 x 10 m (0.1 ha) plot was established and data on soils, parent materials, vegetation cover, tree mensuration and site conditions were collected as outlined in the Integrated Resource Inventory Manual (Alberta Energy and Natural Resources 1985) and in agreement with the Canadian System of Soil Classification (1978). There are 140 detailed plots sampled; their locations are shown in Figure 3.6.

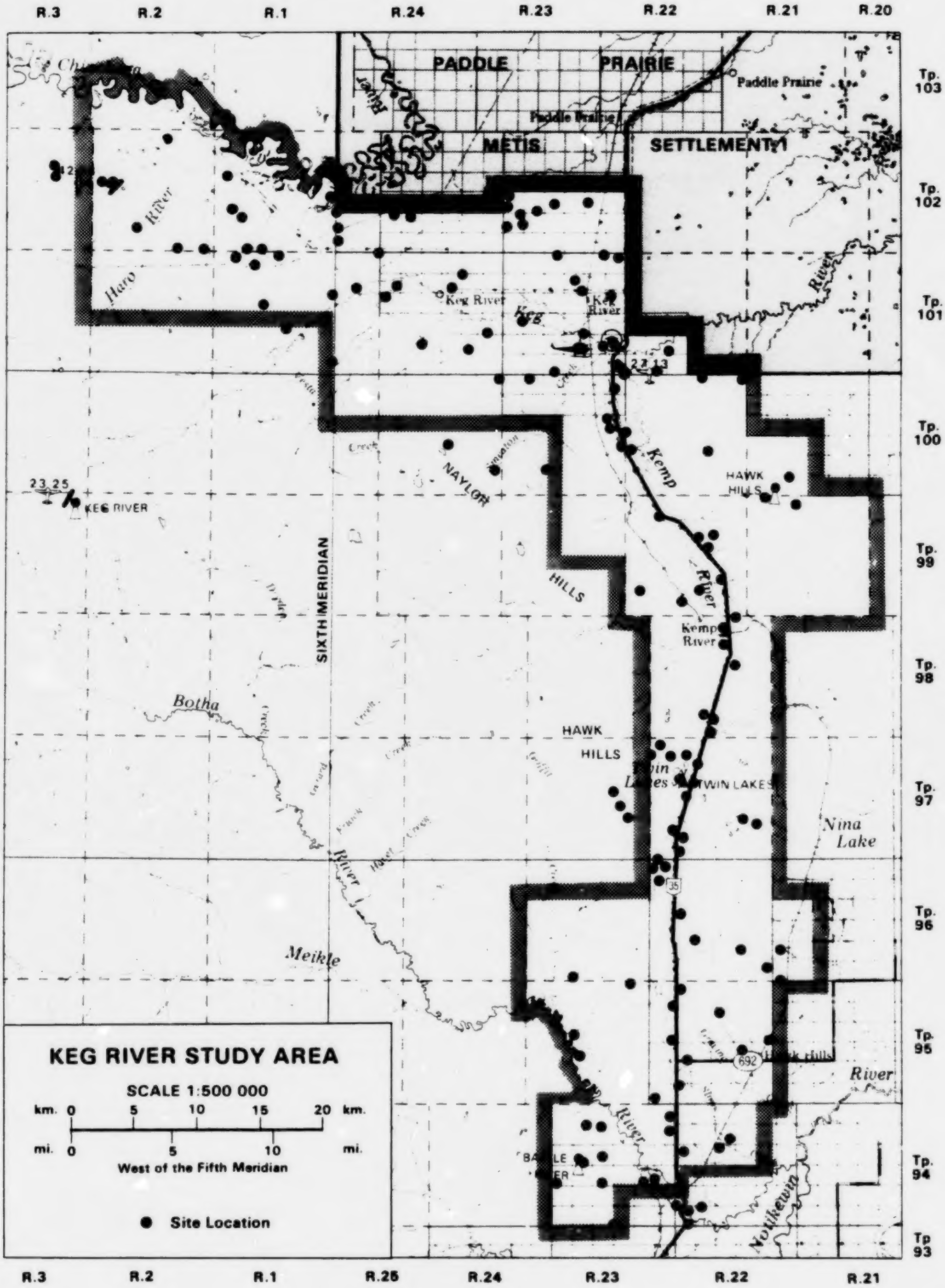

R.3
R.2
R.1
R.24
R.23
R.22
R.21
R.20
PADDLE PRAIRIE
METIS SETTLEMENT 1
Paddle Prairie
Tp. 103
Tp. 102
Tp. 101
Tp. 100
Tp. 99
Tp. 98
Tp. 97
Tp. 96
Tp. 95
Tp. 94
Tp 93
Haro River
Keg River
Keg
23.13
23.25
KEG RIVER
NAYLOR HILLS
SIXTH MERIDIAN
Kemp River
Kemp River
HAWK HILLS
HAWK HILLS
Botha
Twin Lakes
TWIN LAKES
Nina Lake
35
Meikle River
692
Hawk Hills
River
Notikewin
BATTLE RIVER
KEG RIVER STUDY AREA
SCALE 1:500 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
● Site Location
R.3
R.2
R.1
R.25
R.24
R.23
R.22
R.21

Figure 3.6 SITE LOCATION

Following field season, the collected data were summarized and analyzed in the context of each classification. Based on this information and a literature review, preliminary maps and legends were revised to reflect the new information collected. Descriptions of the units in each classification were then written for this report.

3.7 Till Cropping Evaluation Methods

Till cropping evaluations were derived for individual ecosections based on a Soil Rating Schedule (1979) developed by the Lands Division, Alberta Energy and Natural Resources, Alberta Soil Survey and Alberta Municipal Affairs (Table 9).

The first step in using the Soil Rating Schedule (1979) system is to identify the soil zone that represents the study area in question. Soil zones roughly approximate climatic zones. For example, Gray Luvisols typically occur under boreal forests, and implies a particular climatic regime. Once the soil zone has been recognized, it is then rated according to the number of frost-free days in the area. Secondly, soil profile variation, soil texture, stoniness and topography are rated. These ratings represent percentages and are sequentially multiplied by the soil rating. For example:

Table 9

SOIL RATING SCHEDULE 1979

Soil Zone (Colour and Depth of Ah Horizon)	Rating
1. Brown	30-45
2. Dark Brown	45-70
3. Thin Black - less than 15 cm Ah	70-85
4. Black - more than 15 cm Ah	85-100
5. Dark Gray - generally 10-15 cm Ah	
(a) +90 frost-free days	75-85
(b) 75-90 frost-free days	65-75
(c) 60-75 frost-free days	55-65
6. Dark Gray Luvisol - greater than 5 cm Ah, less than 10 cm Ah, Ae exceeding Ah	
(a) +90 frost-free days	65-75
(b) 75-90 frost-free days	55-65
(c) 60-75 frost-free days	45-55
7. Gray Luvisol - less than 5 cm Ah, Ae exceeding Ah but less than 15 cm	
(a) +90 frost-free days	65-70
(b) 75-90 frost-free days	55-65
(c) 60-75 frost-free days	45-55
8. Gray Luvisol - less than 5 cm Ah, greater than 15 cm Ae	
(a) +90 frost-free days	50-55
(b) 75-90 frost-free days	40-50
(c) 60-75 frost-free days	35-45
9. Brunisolic Gray Luvisol and Podzol	
(a) +90 frost-free days	35-45
(b) 75-90 frost-free days	30-35
(c) 60-75 frost-free days	25-30

Profile Variation	
1. Immature (little or no profile development)	50-90
2. Normal profile - moderately to well developed, well drained	90-100
3. Shallow profile - on slopes, on gravel, on bedrock, etc.	10-90
4. Deep mineral surface layer - some low areas, wind accumulation, etc.	80-120
5. Solonchak - saline - little profile development	20-50
6. Solonetz - some saline - well developed hardpan, near surface	30-60
7. Solodized Solonetz - fairly well developed hardpan, some Ae	50-80
8. Solodic - weak hardpan, often appreciable Ae	70-90
9. High lime profile - lime at or very near surface	50-80
10. Gleysolic - low and high humic, non-saline soils, lacking good drainage	40-80
11. Organic - Humisol	55-80
- Mesisol	35-55
- Fibrisol	10-35
12. Acidity - at approximately 25 cm - pH 5.5-5.0	60-80
- pH 4.5-5.0	30-60
- pH less than 4.5	10-30

Texture		Area Without a Moisture Deficiency
1. Sand [with normal subsoil - (sand)]	10-25	10-25
2. Loamy sand [with normal subsoil - (sandy)]	25-40	25-50
3. Sandy loam [with normal subsoil - (heavier)]	40-70	50-80
4. Loam [with normal subsoil - (heavier)]	60-90	80-100
5. Silt loam [with normal subsoil - (heavier)]	80-100	70-80
6. Clay loam [with normal subsoil - (heavier)]	75-95	60-80
7. Clay [with normal subsoil - (clay)]	60-90	50-80

Stones	
0. None	100
1. Few - no serious handicap to cultivation	95
2. Some - require removal	85
3. Many - serious handicap to cultivation	75
4. Very many - excessively stony for cultivation	50

Topography	% Slope	Variation Frequency per Half Mile	Rating
1. Level and depressional	0	0	50-90
2. Leven to gently undulating	0 to 1	2 or less	90-100
3. Undulating	1 to 2	2 or less	80-90
4. Very gently rolling	2 to 4	3 or more	70-80
5. Gently rolling	4 to 8	3 or more	60-70
6. Moderately rolling	8 to 15	3 or more	40-60
7. Strongly rolling and hilly	Over 15	3 or more	30-40

Ecosection CP.M2

Soil Zone	Gray Luvisol - less than 5 cm of Ah, Ae exceeding Ah but less than 15 cm; approximately 93 frost-free days	65 points
Profile Variation	Moderately well to well-drained soils	100/100 points
Texture	Silts and silty clay loams in the upper 20 cm of profile	80/100 points
Stoniness	Very stony in Ae horizon	65/100 points
Topography	0 to 0.5% slopes	100/100 points

$$65 \times 1.0 \times 0.8 \times 0.65 \times 1.0 = \underline{33.8 \text{ points}}$$

Each association is assigned to an evaluation class in accordance with the number of points derived from the above procedure (Table 10 and 11).

An agricultural rating schedule specific to the Keg River study area was developed by regional Public Lands and Alberta Agriculture staff. The rating was established to give an estimate of the agricultural potential relative to the adjoining areas, including the Hotchkiss-Hawk Hills communities in the south and the Keg River community in the north. The rating schedule attempts to consider unique, local cultural practices that have developed over time and prevail over others so that farms in a particular area can become economically viable. In other words, the rating has not been drastically reduced because of limitations that are commonly accepted and easily overcome by local-oriented management (D. Grahn, Alberta Energy and Natural Resources; E. Ryl, Alberta Agriculture; 1985, personal communication). This rating schedule has not been applied

Table 10

SOIL RATING EVALUATION[a]

Evaluation Class	Number of Points
High (H)	+ 55
Moderate (M)	35 - 54
Low - high (La)	25 - 34
- moderate (Lb)	21 - 24
- low (Lc)	16 - 21
Not Capable (NC)	fewer than 16

Table 11

STORIE INDEX [b] RATINGS

Storie Index Classes	Numerical Rating	Capability
8	78 - 100	Very good to excellent arable
7	58 - 78	Good to very arable
6	41 - 58	Fairly good to good arable
5	28 - 41	Fair to fairly good arable
4	16 - 28	Marginal arable
3	9 - 16	Good to excellent pasture
2	4 - 9	Fair to good pasture
1	0 - 4	Poor to fair pasture

---

[a] Strong, W.L 1981. Ecological Land Classification and Evaluation, Jean D'Or Prairie. Alberta Energy and Natural Resources, Edmonton. Report T/11 #5.

[b] Alberta Soils Advisory Committee. 1983. Agriculture Systems of Rating Arable Land in Alberta. Soils Branch, Alberta Agriculture, Edmonton.

within this report, but was applied during the planning process in conjunction with the evaluations as outlined in this report. This evaluation schedule is outlined in Appendix 1 of this report.

3.8 Forestry Evaluation Methods

Productivity evaluations and the probability of white spruce regeneration were requested as part of the Integrated Resource Inventory. The following sections discuss the methods used in obtaining these evaluations.

3.8.1 Productivity Evaluation

Forest productivity information is used as the sole criterion upon which forestry evaluations for individual ecosections are based. It is recognized that other factors of ecological and silvicultural importance (e.g., erosion, site treatment, species selection) should be included in forestry evaluations. However, because of time constraints, development of an appropriate evaluation methodology was directed toward a reproducible means of assessing productivity.

The plant association is used here as the basic productivity unit. Height, age and diameter measurements from all plots included within an association are used to calculate total mean annual increment (MAI) and site index (SI), two measures of site productivity commonly employed in forest site assessment. Simple descriptive statistics (mean, standard deviation) are calculated for MAI and SI for each association. Subsequently, associations can be compared and ranked according to relative productivity on a local or provincial scale.

Section 5 of Volume II gives further details pertaining to data analysis and interpretation (Tables 5.1-5.6, Figures 5.1 and 5.2). Appendix 1 of Volume II provides detailed vegetation and mensuration information.

Once plant associations have been classified, data from individual sites within ecosections along with 1:15 000 Phase III forest cover maps and available air photos are used to deduce the most commonly occurring associations within a given ecosection. A simple productivity rating for either MAI or SI can then be assigned to an ecosection if associations of similar productivity predominate (e.g., moderate or M).

Where two or three associations with different productivities occur within an ecosection, it is necessary to define productivity complexes. Given the low sampling intensity and the scale of air photos available for the Keg River study, it is impossible to accurately determine the percentage of aerial coverage of a given association within an ecosection. Therefore, broad productivity complexes using intervals of 20 to 30 per cent are used. For example, in a given ecosection one association ranked as being highly productive (H) might be judged to occur over about 70 per cent of the area, and another association which is moderately productive (M) over the remaining 30 per cent. The productivity complex is thus H^7M^3. A maximum of three associations are used to define productivity complexes.

For some areas such as cultivated lands with only small remnants of forest, classifications were not made. For a few other areas, a potentially productive (PP) class was defined based solely on existing site conditions. These areas support willow communities on moist, rich soils (Volume II, Section 3.3.3).

3.8.2 White Spruce Regeneration Probability

The plant association is again used as the basis for this evaluation. The assumption is that the probability of finding white spruce in the understory of a given association is dependent partly on stand age and site conditions, which are in turn reflected by the association. This assumption could not be substantiated using data collected for this study.

The percentage of sample plots in which white spruce regeneration was noted was calculated for each association. Associations were then ranked with an arbitrarily-established three-level classification as follows.

White Spruce Regeneration Probability	Occurrence in Association by Total % of Plots
H (high)	>75
M (moderate)	40 - 75
L (low)	<40

Ecosections are assigned probability ratings based on representation of different associations in an identical way to that described above for productivity.

This evaluation is useful only in the most general terms and has serious limitations including:

(1) validity of above-mentioned assumption
(2) small sample sizes
(3) no indication of stocking density

Also, these evaluations are wholly based on studies of current vegetation and do not reflect the actual potential for white spruce regeneration.

3.9 Wildlife Evaluation Methods

The following steps were followed in evaluating the habitat suitability of ecosections for moose and mule deer.

1. Major habitat requirements (food and cover) for moose (fall/winter and spring/summer) and mule deer (fall/winter) were reviewed and summarized. Weightings were assigned to these requirements as per Fish and Wildlife species-habitat relation model (IEC Beak 1984). Food and cover are ranked 60/40 and 50/50 in these models for moose and mule deer, respectively.

2. For a given ecosection, the major physiognomic types, (i.e., coniferous-dominated mixedwood) and plant associations that occur within the ecosection are identified and recorded (Figure 5.5 and Table 5.9, Volume II).

3. Using relative productivity rankings derived from statistical analysis of biomass productivity for each association, forage

production was rated for the ecosection based on the associations present. Browse productivity is of primary importance for both moose and mule deer in fall and winter, and forb productivity is potentially important in spring.

4. Using the species habitat relation models, cover was rated within the ecosection by physiognomic criteria (Tables 11, 12 and 13).

5. Interspersion and juxtaposition were assessed to modify the rating obtained from food and cover assessments. Both are discussed and defined below.

Interspersion

Defined here as "a measure of heterogeneity for both food and cover attributes within an ecosection," a modification of the definition given by Giles (1978, in Heinen and Cross 1983). A three-level scale was used, with the classes defined as follows.

Low Interspersion. The occurrence of two more more similar (in terms of food, cover) plant associations having low habitat values (food, cover) for a given species within an ecosection, or the dominance of one plant association having low habitat value within the ecosection.

Moderate Interspersion. The occurrence in the ecosection of two more plant associations, each of which satisfies some of the habitat requirements of a given wildlife species.

Table 12

THERMAL COVER REQUIREMENTS FOR MOOSE DURING THE FALL/WINTER PERIOD

Ranking	Physiognomic Structure	Rationale/Reference
Best	Coniferous forest Coniferous-dominated mixed forest	Coniferous forest provides the best cover and suitable coniferous stands may be found in coniferous-dominated mixed forests
Moderate	Deciduous forest Deciduous-dominated mixed forest Muskeg	Mixedwood and deciduous forest can be utilized as cover during fall/winter. Muskeg with a significant percentage of treed cover can provide thermal cover.
Poor	Shrubland Shrubland with subdominant grass/forb	Categories ranked as poor offer little treed cover.
Inadequate	Non-vegetated water Cultivated Cultivated annual crops Cultivated perennial forage	Forest cover is required to provide thermal cover for moose during fall/winter; therefore categories with no forest cover are inadequate.

SOURCE: IEC Beak Consultants Ltd. 1984. Species-Habitat Relationship Model for Moose. Prepared for Alberta Energy and Natural Resources, Fish and Wildlife Division.

Table 13

THERMAL, REPRODUCTIVE AND ESCAPE COVER REQUIREMENTS FOR MOOSE DURING THE SPRING/SUMMER PERIOD

Ranking	Physiognomic Structure	Rationale/Reference
Best	Coniferous forest Coniferous-dominated mixed forest Deciduous-dominated mixed forest Deciduous forest	Wooded categories provide the best cover because of the dense overstory in coniferous forest and the well-developed understory of deciduous forest. These provide maximum shade and obstruction of lines in sight.
Moderate	Shrubland	The categories ranked as moderate and poor have progressively less vegetation that offers shade and obstruction to lines of sight.
Poor	Shrubland with subdominant grass/forb Muskeg	
Inadequate	Non-vegetated water Emergent aquatics Mixed grass/forb cover Cultivated Cultivated annual crops Cultivated perennial forage	Trees or tall shrubs are required to provide the obstruction of lines of sight needed for reproductive and escape cover, and to provide shade to lessen heat stress, for an animal the size of a moose. Therefore, categoreis without treed or tall shrub cover are inadequate.

SOURCE: IEC Beak Consultants Ltd. 1984. Species-Habitat Relationship Model for Moose. Prepared for Alberta Energy and Natural Resources, Fish and Wildlife Division.

Table 14

THERMAL COVER REQUIREMENTS FOR MULE DEER DURING THE FALL/WINTER PERIOD

Ranking	Physiognomic Structure	Rationale/Reference
Best	Coniferous forest Coniferous-dominated mixed forest Deciduous-dominated mixed forest Deciduous forest	Trees provide the best winter cover in forested areas.
Moderate	Shrubland Shrubland with subdominant grass/ forb	Categories with a relatively high shrub component provide moderate cover.
Poor	Muskeg	Categories with a limited woody component provide poor cover.
Inadequate	Non-vegetated water Cultivated Cultivated annual crops Cultivated perennial forage	Categories without vegetation or those which lack a dominant tree or shrub component offer inadequate cover.

SOURCE: IEC Beak Consultants Ltd. 1984. Species-Habitat Relationship Model for Mule Deer. Prepared for Alberta Energy and Natural Resources, Fish and Wildlife Division.

High Interspersion. The occurrence in the ecosection of two or more plant associtions which, alone or in combination, satisfy all of the major habitat requirements of a given wildlife species.

Juxtaposition

Juxtaposition is defined here as "an assessment of the habitat value of an ecosection relative to that of adjacent ecosections, and the contribution of adjacent ecosections to the ecosection being evaluated for a given wildlife species," which is a modification of the definition given by Giles (1978, in Heinen and Cross 1983). Juxtaposition was not assessed in the Fish and Wildlife habitat models (IEC Beak 1974) which were developed for use with 1:1 000 000 scale habitat subregion maps. However, at a scale of 1:100 000 for maplping and habitat evaluation used for the Keg River study, an assessment of justaposition may be just as important as an assessment of interspersion. Because wildlife are highly mobile, any given ecosection may occupy only a part of the individual animal's range. It follows that, for wildlife evaluations, ecosections should not be treated as discrete units but should be evaluated with reference to adjacent ecosections. Juxtaposition is very similar to interspersion in that it is a measure of habitat heterogeneity; however, it should be noted that juxtaposition equals heterogeneity between ecosections, whereas interspersion equals heterogeneity within ecosections.

A three-level scale similar to that for interspersion was used to judge juxtaposition.

Low Juxtaposition. Plant associations within a given ecosection have the same or similar to food and cover values as those of adjacent ecosections. Adjacent ecosections may include associations that are of low habitat value for the wildlife species being evaluated.

Moderate Juxtaposition. The occurrence, in adjacent ecosections, of associations which contrast with those of the ecosection being evaluated, and which satisfy some of the major habitat requirements (e.g., food or cover) of the wildlife species under consideration.

High Juxtaposition. The occurrence, in adjacent ecosections, of associations which contrast with those of the ecosection being evaluated, and which satisfy all of the major habitat requirements of the wildlife species under consideration.

Boundary characteristics such as the degree of interdigitation, number of adjacent ecosections and area and shape of the ecosection being evaluated are also considered.

6. Landform, relief, disturbance, aspect, aquatic form and winter severity (Olson 1984) are also considered in habitat quality assessment. In the Fish and Wildlife species habitat relation models, these other variables are ranked as less important than vegetation (food, cover) and interspersion. Accordingly, such variables are not considered as important in the evaluations, in most cases, and are used to modify the ranking obtained from food, cover, interspersion and juxtaposition.

6. Landform, relief, disturbance, aspect, aquatic form and winter severity (Olson 1984) are also considered in habitat quality assessment. In the Fish and Wildlife species habitat relation models, these other variables are ranked as less important than vegetation (food, cover) and interspersion. Accordingly, such variables are not considered as important in the evaluations, in most cases, and are used to modify the ranking obtained from food, cover, interspersion and juxtaposition.

Winter weather severity is judged to be moderate in the Keg River study area, based on the species habitat relation model and climatological data. Ecosection ratings for mule deer habitat suitability were all downranked by one class except for those with predominantly steep, south-facing exposures, in accordance with the importance ascribed to winter weather severity in the mule deer habitat model.

7. A five-level scale was used to rank ecosections based on habitat quality for a given wildlife species:

H	High
M (H)	Moderate (high)
M	Moderate
M (L)	Moderate (low)
L	Low

These are defined as follows:

High. High food availability, high to moderate cover quality, high interspersion and juxtaposition.

Moderate. Moderate food availability, moderate to high cover quality, moderate interspersion, and moderate juxtaposition. This class has been divided into three subclasses as above. It is htere that the other variables such as landform, aspect, etc. are most frequently employed to arrive at the most appropriate subclass.

Low. Low to very low food availability, low to high cover quality, low interspersion and juxtaposition.

4. ECOREGION

The Keg River study area occurs within the Boreal Mixedwood Ecoregion. Modal sites within this ecoregion are characterized by aspen-poplar forests which have developed on moderately well drained Gray Luvisols (Strong and Leggat 1981). White spruce is the climatic climax species.

Archibald (1985) has recognized two subzones of the Boreal Mixedwood Ecoregion, the Lower and Upper Boreal Mixedwood subzones. These have been defined primarily on the basis of climate. The Keg River study area occurs entirely within the Lower Boreal Mixedwood subzone. Within the study area, Archibald has further subdivided the Boreal Mixedwood Lower Subzone into aspen-white spruce and white spruce-aspen variants on the basis of climate and physiography. Figure 4.1 shows the location of these variants of the Boreal Mixedwood Lower Subzone in the context of the study area.

The aspen-white spruce variant of the Lower Boreal Mixedwood Subzone corresponds with the Peace River and Fort Vermilion lowlands physiographic regions. It also conforms climatically and vegetationally to the dry subregion of the Boreal Mixedwood Ecoregion as defined by Strong and Leggat (1981). These areas receive approximately 250 mm of precipitation during the May to September period and have mean summer temperatures greater than 15.5°C. Modal

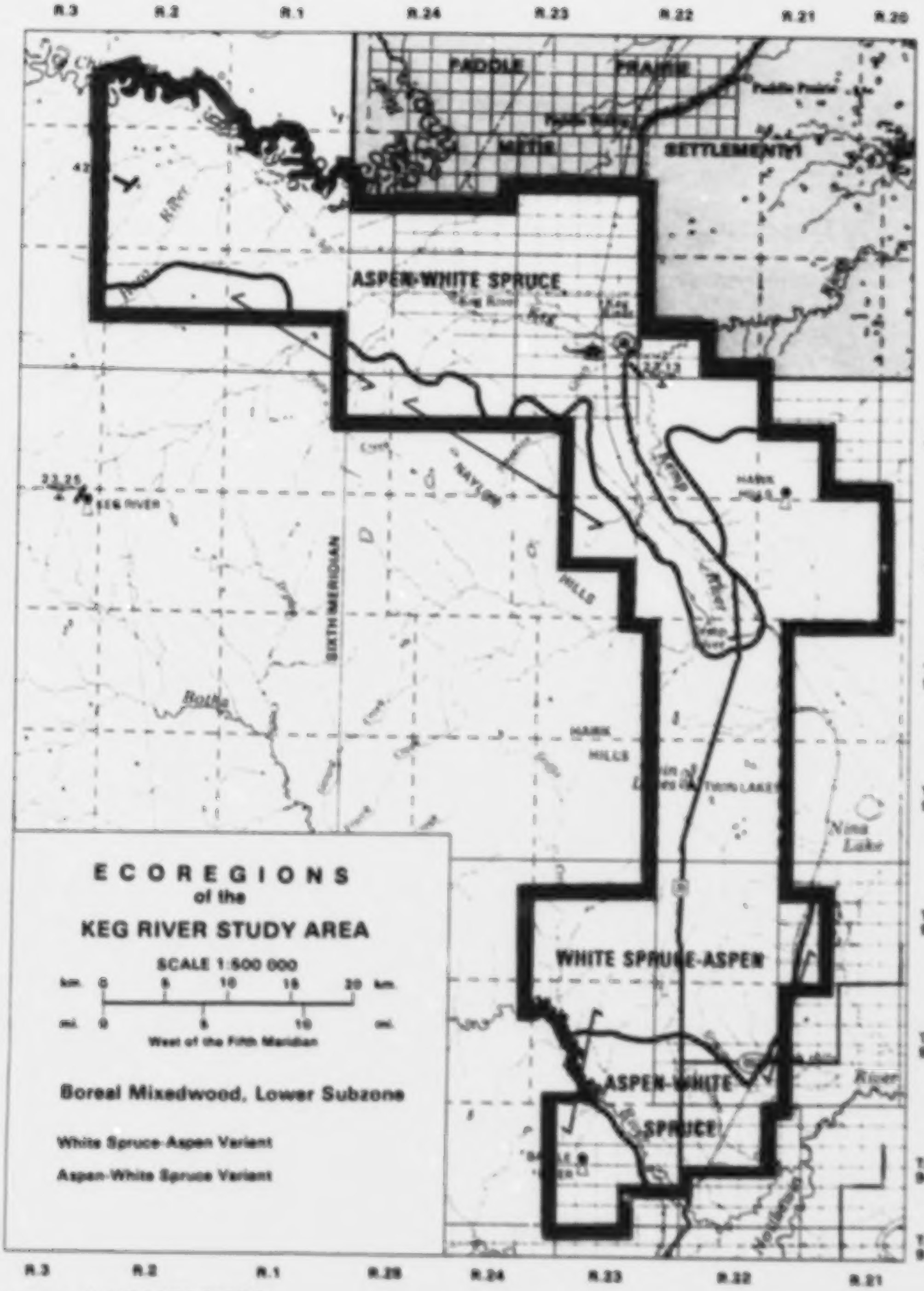

R.3
R.2
R.1
R.24
R.23
R.22
R.21
R.20
Tp. 103
Tp. 102
Tp. 101
Tp. 100
Tp. 99
Tp. 98
Tp. 97
Tp. 96
Tp. 95
Tp. 94
Tp. 93
PADDLE
PRAIRIE
METIS
SETTLEMENT
ASPEN-WHITE SPRUCE
Keg River
KEG RIVER
NAYLOR
HILLS
SIXTH MERIDIAN
Botha
HAWK HILLS
Twin Lakes
TWIN LAKES
Nina Lake
River
WHITE SPRUCE-ASPEN
ASPEN-WHITE SPRUCE
R.25
ECOREGIONS
of the
KEG RIVER STUDY AREA
SCALE 1:500 000
km. 0 5 10 15 20 km.
mi. 0 5 10 mi.
West of the Fifth Meridian
Boreal Mixedwood, Lower Subzone
White Spruce-Aspen Variant
Aspen-White Spruce Variant

Figure 4.1 ECOREGIONS

sites are characterized by aspen communities which have developed on moderately well to imperfectly drained Gray Luvisols. Understories of aspen forests include buffalo-berry, low-bush cranberry, rose, red osier dogwood and hairy wild rye. Mosses occur but generally with low cover.

The white spruce-aspen variant of the Boreal Mixedwood Lower Subzone corresponds to the Clear Hills Upland Physiographic Region. Strong and Leggat (1981) previously mapped this area as part of the Boreal Foothills Ecoregion. This variant conforms climatically to the moist subregion and vegetationally to the wet subregion of the Boreal Mixedwood ecoregion as defined by Strong and Leggat (1981). This area receives approximately 335 mm of precipitation during the May to September period. Mean summer temperatures are less than 15°C. Modal sites are characterized by aspen and white spruce-aspen forests which have developed on moderately well drained Gray Luvisols. The increased occurrence of white spruce may be attributed to the lower incidence of fire. Alder, low-bush cranberry and rose are common understory species. Well-developed moss layers are more likely to occur within this variant.

Plate 1

Barley is the most common cereal crop grown in the study area. This field, looking south from Keg River to the Naylor Hills, has a combination of level topography, slightly acid parent materials comparatively rich in organic matter, long summer days and moderate temperatures. These factors combine to produce conditions favorable for barley production.

Plate 2

Road cuts, excavations and stream banks provide valuable clues to the geologic and Quaternary history of the area. In this view, soft Upper Cretaceous sandstones and shales are overlain by finer-textured glacial tills and glaciofluvial materials.

Plate 3

A profile of a well-developed Solonetzic Gray Luvisol soil developed in fine-textured till deposits overlying residual shales.

Plate 4

A profile of a moderately well drained Dark Gray Solod developed in clay-rich glaciolacustrine sediments. Note the well-developed Ah horizon overlying the heavily leached Ae horizon. The horizon sequence is as follows: LFH, Ah, Ae, AB, Bnt, Cca.

LFH
Ae
Btnj
Bt
C

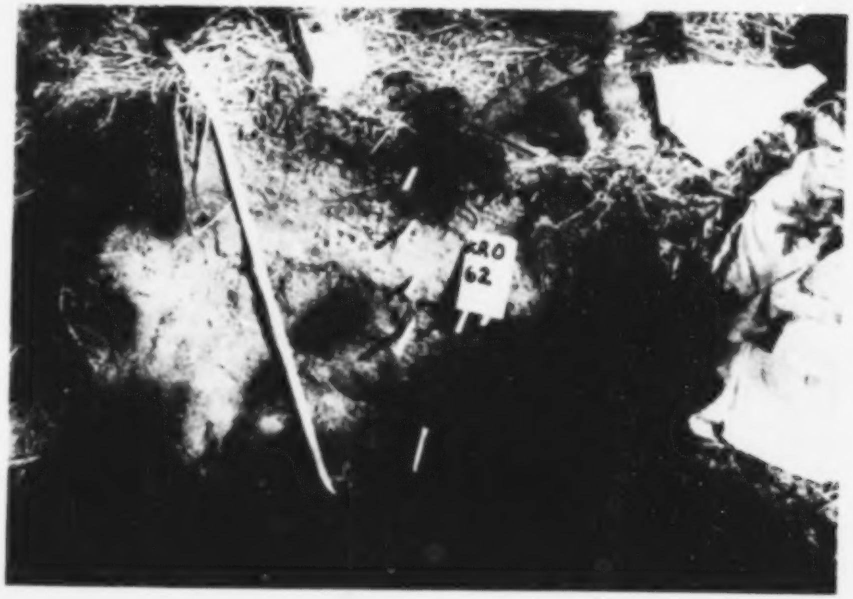

CRO
62

Plate 5

A profile of a poorly drained Orthic Luvic Gleysol developed in clay-rich glaciolacustrine parent materials. Note the heavily leached Aeg horizon overlying the strongly gleyed and mottled Bntg horizon. The Cg horizon is under the water.

Plate 6

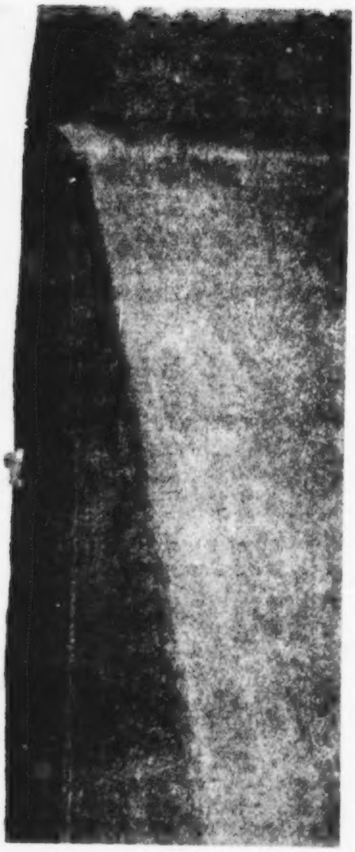
A profile of a well-drained Eluviated Dystric Brunisol developed in medium textured colluvial materials overlying residual shales of the acid Kaskapau Formation. Note the heavily leached Ae horizon overlying reddish coloured Bm horizon.

Plate 7

Cleared agricultural lands in the vicinity of Hawk Hills generally occur in Ecosection PRL.GL2. The soils of this ecosection have been rated as fairly good arable soils. The gentle, treed slopes to the left of the grain elevator have been rated as having marginal to fairly good arable soils.

Plate 8

Panoramic view of the Hawk Hills (CHU.CM1 in background) looking north from the area immediately north of Twin Lakes. The complex vegetation pattern of the Hawk Hills provides conditions favorable for ungulates. Similarily, the well-stocked aspen stands of the foreground (CHU.GL4) are rich in palatable browse species and also provide favorable ungulate habitat.



KR061
SW/Fm
0.L6

KR 127
10/8/84

Plate 9

A small natural clearing on the steep, northeast-facing slopes of the Hawk Hills (CHU.CX1). Trampling of vegetation and light salt crusts indicate that portions of this clearing are used as a salt lick by ungultes.

Plate 10

The variety of drainage conditions present in ecosection CHU.GF01 provides contrasting vegetation communities favorable for ungulate habitat. Depressional willow communities have developed on poorly drained wetland terrain while aspen communities with lush understories occur on well-drained glaciofluvial islands.

Plate 11

A groundwater discharge area on the south slope of the Hawk Hills. Pronounced groundwater seepage creates high soil moisture condition which favor the development and maintenance of willow, black spruce and aspen-balsam poplar communities. Areas such as these provide conditions favorable for ungulates.

Plate 12

Panoranic view from the Battle River Tower (CHU.MX1) looking northeast towards the Meikle River. The white spruce in the mid-ground denotes ecosection CHU.MF1 while the aspen forests of the mid-and background are part of ecosection CHU.M1. This combination of aspen and white spruce is typical of the Clear Hills Upland.

Plate 13

Extensive salvage operations have occurred atop the Naylor Hills (CHU.M3). White spruce stands have been cleared to reduce further spread and damage by the engelmann spruce beetle.

Plate 14

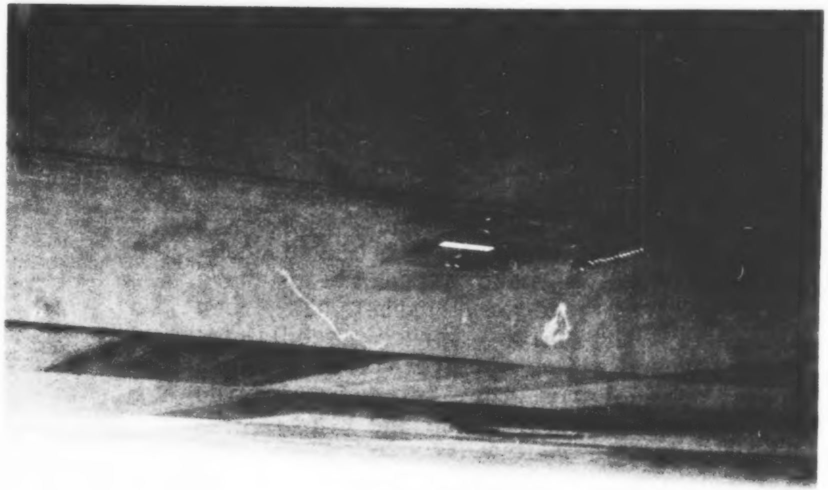
Level glaciolacustrine deposits in the vicinity of Keg River (HLP.GL1) have been extensively developed for agricultural production. This particular area was originally a native grassland and was first developed during the early 1930s.

Plate 15

"Humpy doughnut" topography (HLP.GL2) in the northeast corner of the study area. Clearing has been accelerated in recent years to provide additional farming land.

Plate 16

A complex landscape of subdued "humpy" doughnuts" and wetland terrain north of the Keg River grain elevator. Young aspen communities occur on higher terrain with willow shrublands in depressional areas. Portions of the land in the foreground have been cleared.



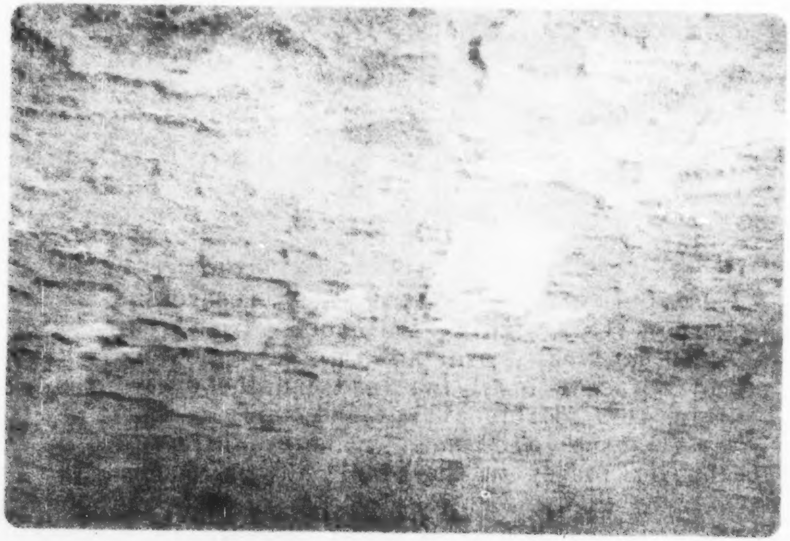


Plate 17

A "Maintain Our Forest" site in ecosection CP.M2. Young aspen stands have been cleared and the site has been planted with white spruce seedlings. Aspen regeneration is prevalent. These areas, especially the fringes, provide excellent browse for moose and deer.

Plate 18

The varied ecological conditions of ecosection CP.M01 provide habitat suitable for ungulates. Fine-textured till deposits support young aspen communities and surrounded by organic wetland terrain.

Plate 19

The Chinchaga River (F1) meanders tortuously across the Fort Vermilion Lowland. Very productive aspen, balsam poplar and white spruce stands have developed on low-lying alluvial terraces.

Plate 20

Damming of small streams by beavers, especially within the Fort Vermilion Lowland, has resulted in the flooding of adjacent low-lying land and the creation of additional wetland terrain and small shallow ponds. Note the two beaver lodges in the middle of the pond.

5. DESCRIPTIONS OF MAPPED LANDSCAPE

5.1 Peace River Lowland Physiographic Region (PRL)

The Peace River Lowland occur in the extreme southern portion of the study area and are characterized by nearly level to very gently undulating and inclined topography. This lowland area slopes to the southeast from 595 masl in the northwest to 470 masl in the southeast corner of the study area and is underlain by soft marine shales of the Lower Cretaceous Upper Shaftesbury Formation.

Non-stony to very slightly stony glaciolacustrine and lacustro-till deposits occur across the entire region. These materials are moderately well to poorly drained and are generally moderately acid to moderately alkaline (pH 5.5-8.0) throughout.

Soils range from Orthic Gray Luvisols to Dark Gray Solods and Gleyed Solodized Solonetz to Orthic Luvic Gleysols. Most Luvic Gleysols show strong solonetzic features. These soils are usually characterized by highly variable A horizons in terms of thickness and organic matter content, and compact B horizons which may restrict water percolation and root penetration.

The Peace River Lowland receive approximately 250 mm of rainfall during the May to September period and have a frost-free period of approximately 85 days. The average number of growing degree days is approximately 1 200. It is expected that the region experiences similar moisture deficit for the May to September period as that of the Fort Vermilion Lowlands, approximately 225 mm.

The vegetation of the Peace River Lowland is typical of the Boreal Mixedwood Ecoregion. Fire origin aspen communities (40-50 years) dominate the landscape with the exception of a large white spruce stand that occupies the central portion of the region. A significant portion of this region has been cleared and cultivated since the late 1940s.

Figure 5.1 is a schematic diagram of the Peace River Lowland. It should be noted that this region has not been further subdivided into physiographic subregions.

5.1.1 Ecosection Descriptions

Ecosection PRL.GL1

Landform:

> Level to nearly level (0-2% slope) topography characterizes this glaciolacustrine and lacustro-till plain. Surficial materials are virtually stone-free and range in texture from silty clay loams to clay loams. Upper soil horizons are highly variable in pH (4.0-8.0) while parent materials are moderately alkaline (pH 8.0).

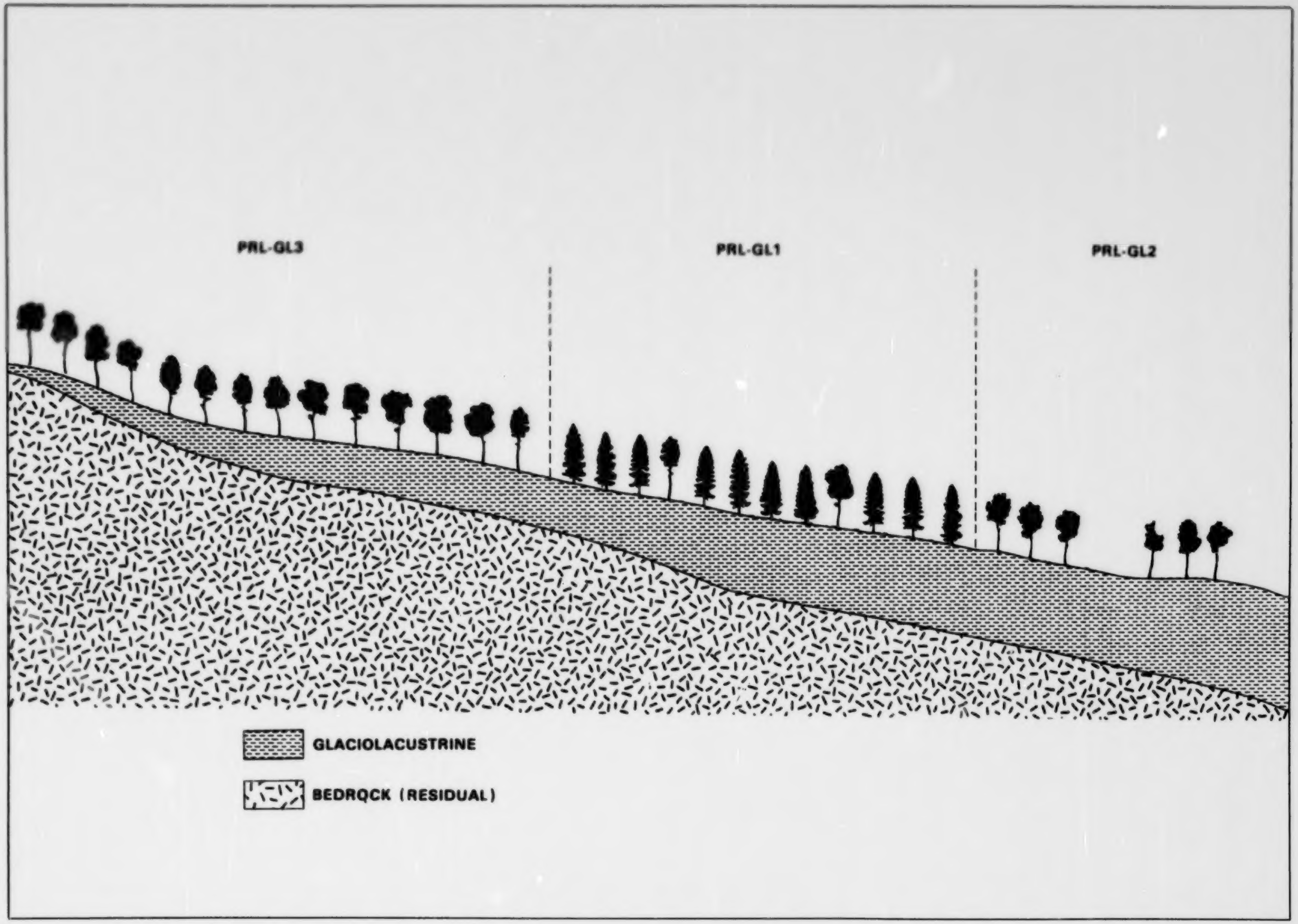

PRL-GL3
PRL-GL1
PRL-GL2
GLACIOLACUSTRINE
BEDRQCK (RESIDUAL)

Figure 5.1 SCHEMATIC DIAGRAM OF THE PEACE RIVER LOWLAND PHYSIOGRAPHIC REGION

Ecological Conditions:

Stands belonging to the white spruce and white spruce-aspen associations with sparse understories of low-bush cranberry and rose, and a well-developed moss layer occur across this ecosection. These forests have developed on moderately well drained Orthic Gray Luvisols and poorly drained Orthic Luvic Gleysols (Plate 5). Gleyed Gray and Gleyed Solonetzic Gray Luvisols are common. The A horizons vary in thickness from 9 to 12 cm and are low in organic matter content.

Ecosection PRL.GL2

Landform:

This nearly level to very gently undulating (0.5-2.5% slope) plain is characterized by stone-free glaciolacustrine material of silty clay to clay texture. These materials are moderately acid (pH 5.5) in the upper horizons and moderately alkaline (pH 8.0) in the parent materials. Very slightly stony lacustro-till deposits are common adjacent the Clear Hills Upland.

Ecological Conditions:

Moderately well drained soils support young aspen communities, the dominate associations being aspen/buffalo-berry and aspen/low-bush cranberry rose. These communities have developed on Orthic and Solonetzic Gray Luvisols and Dark Gray Solods (Plate 4) with compact B horizons. The depth of the A horizon varies from 20 to 30 cm and is characterized by well-developed Ah horizons of 10 cm.

Land Use:

Cultivated land and native forest (Plate 7).

Ecosection PRL.GL3

Landform:

This lacustro-till plain is characterized by nearly level to very gently inclined (0.5-5%) topography. Surficial materials are non-stony to slightly stony sandy clay loams to clay and are slightly acid to moderately alkaline (6.0-8.0) throughout.

Ecological Conditions:

Young aspen communities with variable understories of buffalo-berry, low-bush cranberry and rose have developed on moderately well to poorly drained soils. The aspen/buffalo-berry and aspen/low-bush cranberry-rose associations occur extensively throughout this ecosection. Soils include Orthic Gray Luvisols, Gleyed Solodized Solonetz and Orthic Luvic Gleysols and are usually characterized by compact B horizons which promote the development of perched water tables, especially during the spring months. The A horizons are highly variable in thickness (0 to 30 cm) and have low organic matter content.

Land Use:

Cultivated land and native forest.

5.1.2 Land Use Ratings

Table 15

LAND USE RATINGS FOR THE PEACE RIVER LOWLAND

ECOSECTION	TILL CROPPING		FORESTRY			UNGULATES		
						MOOSE		MULE DEER
	SOIL RATING SCHEDULE	STORIE INDEX	TOTAL MEAN ANNUAL INCREMENT	SITE INDEX	WHITE SPRUCE REGENERATION PROBABILITY	FALL/WINTER	SPRING/SUMMER	FALL/WINTER
PRL.GL1	M	5	$M(H)^8M^2$	M	H	L	L	L
PRL.GL2	M	5	M	M	$L^8M(H)^2$	L	L	M(L)
PRL.GL3	L(H)-M	4-5	M	M	M^7L^3	L	M	M(L)

Till Cropping

The soils of this region have been rated as fair to fairly good arable land. Their main limitations are low soil fertility and, to a lesser extent, unfavorable soil structure. The capability of PRL.GL3 may be somewhat less because of long, slightly more inclined slopes. Also, soil pH's of 4.5 were occasionally observed in PRL.GL3 west of Highway 35 in the upper 25 cm.

Forestry

Forest productivity based on mean annual increment and site index is ranked as moderate within both white spruce and aspen communities. The probability of white spruce regeneration is high under white spruce dominated stands and moderate under aspen canopies. The probability of white spruce regeneration has been ranked as low for cultivated land.

Ungulates:

Overall, the region has been ranked as having a low habitat value for moose and mule deer. The interspersion and juxtaposition of cultivated areas with forested land provides slightly improved habitat for mule deer during the fall/winter period. The deeply incised stream channels of the Meikle River (F2) and Goffit (F3), Gravina and Slims Creeks (F5), provide more favorable habitat for both moose and mule deer. These water courses occur either adjacent to or dissect the region.

5.2 Clear Hills Upland Physiographic Region (CHU)

The Clear Hills Upland includes much of the central portion of the study area and both the Naylor and Hawk hills. This rugged upland area ranges in elevation from 490 to 725 masl. Topography varies from gently undulating to moderately sloping with strong to extreme slopes occurring along the scarp face of the Naylor Hills.

The entire region is underlain by a sequence of shales and sandstones of Upper Shaftesbury, Dunvegan and Kaskapau formations. These in turn are overlain by a thin mantle of surficial materials, including till, lacustro-till, residuum, colluvium, glaciofluvial and organic materials. Lacustro-till deposits are found at elevations between 485-640 masl. The pH of the surficial materials is strongly influenced by the proximity of the acid Kaskapau Formation to the surface. Textures vary from medium to coarse glaciofluvial deposits to moderately fine till and lacustro-till deposits.

Orthic Gray Luvisols have commonly developed on till, residuum and lacustro-till deposits, while Brunisolic Gray Luvisols and Dystric and Eutric Brunisols have developed within glaciofluvial, residual and colluvial materials. Gleysols, Mesisols and Fibrisols are common in wetland areas. Seepage is common along the slopes of both the Naylor and Hawk Hills.

The Clear Hills Upland receives approximately 335 mm of precipitation during the May to September period and has a frost-free period generally in excess of 95 days. The average number of growing degree days is approximately 1 018. Equal amounts of precipitation and potential evapotranspiration result in neither a marked moisture deficit nor surplus for much of this upland area.

The vegetation of the Clear Hills Upland is typical of the uplands occurring within the Boreal Mixedwood Ecoregion with aspen and white spruce-aspen forests occurring over much of the area. These stands are somewhat older than those occurring within the Peace River and Fort Vermilion lowlands as a result of the lower incidence of fire. Mature white spruce stands are being harvested atop the Naylor Hills to avoid further damage by the Engelmann spruce beetle. Lodgepole pine stands are also found, but to a lesser extent at higher elevations, and are commonly found in association with either aspen or black spruce. The occurrence of lodgepole pine is more frequently associated with sandy glaciofluvial materials. Wetland areas support a mixture of black spruce and willow communities.

Figure 5.2 is a schematic diagram of the Clear Hills Upland. It should be noted that this region has not been subdivided into physiographic subregions.

5.2.1 Ecosection Descriptions

Ecosection CHU.CM1

Landform:

This moderate to strongly inclined (10-30%) landscape (Plate 8) includes the long, strongly dissected slopes of the Hawk Hills. Loamy colluvial veneers and blankets commonly overlie extremely acid (4.5-5.0) till deposits. Residuum may be present on steeper slopes while thin glaciolacustrine veneers mantle the base of the hills. Textures vary from silty clay loam to clay loam.

Ecological Conditions:

Maturing aspen forests occur throughout the landscape, the dominant association being aspen/low-bush cranberry-rose. The aspen-balsam poplar/red osier dogwood and white spruce-aspen associations are present but to a lesser extent. These forests have developed on moderately well drained Orthic and Brunisolic Gray Luvisols and Eluviated Dystric Brunisols. The greater solar radiation received on these west and southwest facing slopes is offset to a large degree by groundwater seepage.

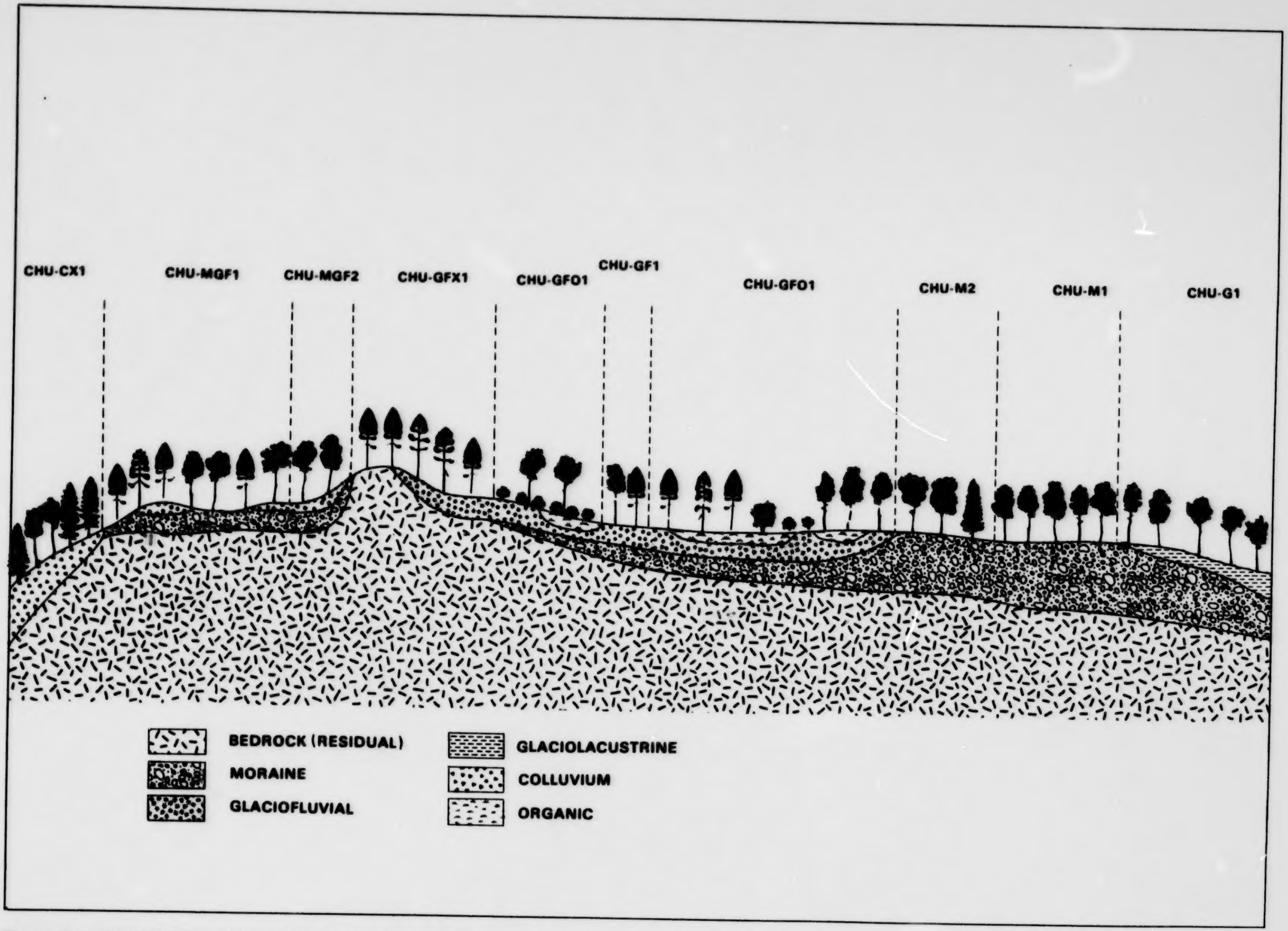

CHU-CX1
CHU-MGF1
CHU-MGF2
CHU-GFX1
CHU-GFO1
CHU-GF1
CHU-GFO1
CHU-M2
CHU-M1
CHU-G1
BEDROCK (RESIDUAL)
MORAINE
GLACIOFLUVIAL
GLACIOLACUSTRINE
COLLUVIUM
ORGANIC

Figure 5.2 SCHEMATIC DIAGRAM OF THE CLEAR HILLS UPLAND PHYSIOGRAPHIC REGION

Ecosection CHU.CX1

Landform:

This ecosection includes the moderate to very strongly inclined (10-45%) slopes of the Clear Hills Upland. Loamy colluvial veneers and blankets commonly overlie extremely acid (pH 4.0-4.5) residual bedrock materials. Residuum is commonly exposed along deeply entrenched stream courses and varies from sand to silty clay. Slumping is common.

Ecological Conditions:

Forests of the aspen-balsam poplar and white spruce associations have developed in response to the relatively cool and moist conditions produced by the combined effects of groundwater seepage and east-northeast facing slopes. In localized areas where slopes are not as steep and seepage is not as pronounced, stands belonging to the aspen/alder association have developed. Also, small natural clearings occur, but are extremely limited in extent (Plate 9). All of these associations have developed on well to imperfectly drained soils. Eluviated Dystric (Plate 6) and Eutric Brunisols dominate on steeper slopes while Orthic and Dark Gray Luvisols are common on gentler sloping topography.

Land Use:

Native forest; portions of this forest have been harvested.

Ecosection CHU.CX2

Landform:

This strongly dissected landscape includes a portion of the northeast facing scarp slope of the Naylor Hills. Moderate to strongly inclined (15-30% slope) topography dominates; however, steeply (45-70% slope) inclined topography is commonly associated with eroded gullies and deeply incised stream courses. Loamy textured colluvial veneers and blankets overlie extremely acid (pH 4.0-4.5) residual bedrock. Bedrock is commonly exposed along stream courses. Textures range from sand to silty clay. Slumping is pronounced.

Ecological Conditions:

Maturing aspen communities typify this landscape with the dominant associations being aspen-balsam poplar, aspen/low-bush cranberry-rose and aspen/alder. White spruce is a minor component of the forest canopy. These forests have developed on moderately well to rapidly drained Orthic and Eluviated Dystric Brunisols and Orthic Regosols.

Ecosection CHU.GF1

Landform:

These small, isolated glaciofluvial deposits occur adjacent to CHU.GF01 in the area south of Twin Lakes and are underlain at depth by moderately fine textured moraine. These deposits vary in thickness from 40-200 cm and textures range from loamy sand to sandy clay loam. They are generally extremely acid (pH 4.5) in the upper horizon and strong to slightly acid (pH 5.0-6.5) in the lower horizons. Surface expression varies from level to very gently undulating (0-5% slope).

Ecological Conditions:

Glaciofluvial materials support a mixture of aspen and lodgepole pine communities, the dominant associations being aspen/alder and lodgepole pine-black spruce/feathermoss. These stands have developed on moderately well to well drained Eluviated Eutric Brunisols and Brunisolic Gray Luvisols.

Land Use:

The Alberta Research Council (1981) has delineated parts of this ecosection as source areas for aggregate resources.

Ecosection CHU.GF01

Landform:

This level to very gently undulating (0-5% slope) landscape is a complex of subdued glaciofluvial islands separated by wetlands consisting mainly of horizontal fens. Both Slims and Gravina creeks have their origins in this area. Glaciofluvial materials vary in texture from silt loams to silty clay loam and are usually strongly to slightly acid (pH 5.0-6.5). Organic accumulations derived from sedge and sphagnum peats occur as either veneers or blankets overlying glaciofluvial materials, and account for approximately 50% of all surficial materials.

Ecological Conditions:

Aspen and lodgepole pine communities occur on moderately well to well drained glaciofluvial deposits. These stands have developed mainly on Eluviated Dystric and Eutric Brunisols. Black spruce and depressional willow occur on poorly to very poorly drained organic materials where peaty Gleysols, Fibrisols and Mesisols dominate. The major associations are aspen/alder, lodgepole pine-black spruce/feathermoss, black spruce/labrador tea/moss and depressional willow. Small areas of sedge fen have developed within the wettest depressions. Plate 10 depicts the varied ecological conditions that occur in this landscape.

Land Use:

The Alberta Research Council (1981) has delineated parts of this ecosection as source areas for aggregate resources.

Ecosection CHU.GF02

Landform:

This ecosection consists of a complex of very gently undulating (2-5% slope), pitted glaciofluvial deposits and organic wetland (fen) terrain. Glaciofluvial materials are strongly acid (pH 5.0-5.5) and vary from silt loams to silty clay loams. Organic accumulations, which account for approximately 40% of all surficial materials, are derived from sphagnum peats and occur as either veneers or blankets overlying glaciofluvial materials. Minor glacial meltwater channels are present.

Ecological Conditions:

Aspen communities are found on well-drained glaciofluvial materials where Brunisolic Gray Luvisols and Eluviated Eutric Brunisols dominate. Similarily, peaty Gleysols and Mesisols have developed on poor to very poorly drained organic accumulations which support open black spruce communities. The dominant associations include aspen/alder and black spruce/labrador tea/moss.

Ecosection CHU.GFX1

Landform:

Glaciofluvial veneers and blankets overlie residual bedrock materials in this fluted upland area. Textures range from loamy sand to sand and pH's are highly variable (pH 5.5-8.0). A small bedrock ridge overlain by thin till deposits forms the northern boundary of this ecosection. Here, where the bedrock is very near the surface, extremely acid (pH 4.5) conditions prevail. Surface expression is very gently to gently undulating (2-9% slope).

Ecological Conditions:

Both aspen and lodgepole pine communities occur across the landscape, the former being dominant. These forests have developed on moderately well to rapidly drained Eutric Brunisols and Brunisolic Gray Luvisols. The major associations occurring within this mapped area include aspen/alder, lodgepole pine/

alder and lodgepole pine-black spruce/feathermoss. The data suggests that the aspen communities are associated with slightly higher nutrient regimes.

Ecosection CHU.GL1

Landform:

This very gently to gently undulating and inclined (2-9% slope) plain represents a portion of the lower side slopes of the Clear Hills Upland. These slopes are overlain primarily by lacustro-till materials which are slightly acid to moderately alkaline (pH 6.0-8.0) throughout. Textures range from silty clay loam to clay loam and stone content ranges from non-stony to very slightly stony. Where the topography becomes somewhat more inclined, surficial materials become thinner and commonly overlie residual bedrock.

Ecological Conditions:

Young (40-50 years) aspen communities have developed across the landscape on moderately well to imperfectly drained Dark Gray Solods and Gleyed Solonetzic Gray Luvisols. These soils are characterized by compact B horizons which may restrict water movement and root penetration. The dominant associations of this mapped unit are aspen/buffalo-berry and aspen/low-bush cranberry-rose. This ecosection is depicted in the background of Plate 7.

Ecosection CHU.GL2

Landform:

This gently to moderately undulating and rolling (5-15% slope) landscape is overlain by non-stony to very slightly stony lacustro-till deposits. These materials are generally moderately acid to moderately alkaline (pH 5.5-8.0) throughout and textures vary from silty clay loams to clay loam.

Ecological Conditions:

Moderately well to well drained Orthic and Dark Gray Luvisols and imperfectly drained Gleyed Solonetzic Gray Luvisols occur across most of this landscape. These soils support mature white spruce and white spruce-aspen forests. The white spruce-aspen association is dominant. Compact B horizons in these soils often restrict water movement and root penetration and may give rise to perched water tables.

Land Use:

Portions of this mapped area have been harvested for lumber production.

Ecosection CHU.GL3

Landform:

These very gently undulating to inclined (2-5% slope) basin-like areas represent groundwater discharge areas. Lacustro-till deposits are virtually stone-free and are commonly overlain by thin fluvial and organic veneers. Materials are neutral to moderately alkaline (pH 6.5-8.0) throughout and textures vary from loamy sands to silt loams.

Ecological Conditions:

Pronounced groundwater seepage has led to the development of imperfectly to poorly drained Gleyed Cumulic Regosols and Orthic and Humic Luvic Gleysols. Seepage is often encountered within the upper 100 cm. These very moist soils support mixed aspen and aspen-balsam poplar forests with variable understories of low-bush cranberry, rose and red-osier dogwood. Where seepage is near the surface, black spruce and willow seepage communities have developed (Plate 11). The dominant associations within these basins are aspen-balsam poplar, aspen/low-bush cranberry-rose-red osier dogwood, Black spruce/labrador tea/moss and seepage willow.

Ecosection CHU.GL4

Landform:

Non-stony lacustro-till deposits overlie gently inclined to rolling (6-9% slope) topography at the base of the Hawk Hills. Fluvial veneers derived from slope wash are common throughout the mapped area, especially adjacent to steeper terrain (CHU.CX1). Materials are neutral to moderately alkaline (pH 6.5-8.0) throughout and textures range from silty clay loams to silty clays. Seepage tracks are common.

Ecological Conditions:

Maturing aspen forests with variable understories of white spruce, low-bush cranberry, rose, red osier dogwood and tall larkspur occur across this landscape; the dominant association is aspen/low-bush cranberry-rose-red osier dogwood. The white spruce-aspen association is also present, but to a lesser extent. These forests have developed mainly on imperfectly drained Gleyed Gray Luvisols, Gleyed Cumulic Regosols and poorly drained Orthic Luvic Gleysols. Moderately well drained Orthic Gray Luvisols occur further from the base of the slopes. This ecosection is depicted in the foreground of Plate 8.

Ecosection CHU.M1

Landform:

This very gently undulating to inclined (2-5% slope) plain (Plate 12) is overlain by non-stony to slightly stony till deposits which range in texture from sandy clay loams to clay loam. These materials are generally moderately acid (pH 5.5-6.0) in the upper horizons and moderately alkaline (pH 8.0) in the lower horizons.

Ecological Conditions:

Young aspen forests with variable understories of low-bush cranberry, rose and buffaloberry occur across most of this landscape, with aspen-white spruce communities found adjacent to Goffit Creek. The dominant associations include aspen/low-bush cranberry-rose, aspen/buffalo-berry and to a lesser extent white spruce-aspen. These stands have developed on moderately well drained Orthic and Dark Gray Luvisols and imperfectly drained Gleyed Solonetzic Gray Luvisols and Orthic Luvic Gleysols. The aspen/buffalo-berry association is usually found on imperfectly drained soils with compact B horizons where perched water table conditions commonly develop during the spring months.

Land Use:

Portions of the forest west of the Meikle River along the Chinchaga Forestry Road have been thinned.

Ecosection CHU.M2

Landform:

Slightly to moderately stony morainal veneers and blankets overlie this very gently to moderately rolling (2-15% slope) upland area. Textures range from sandy clay loams to silty clay. The soils are moderately acid (pH 5.5-6.0) in the upper horizons to mildly alkaline (pH 7.0-8.0) in the lower horizons. Thin glaciofluvial veneers may overlie these till deposits adjacent to ecosections CHU.GF1 and CHU.GF01. Small wetland areas account for approximately 5% of the total area.

Ecological Conditions:

Moderately well to well drained Orthic and Brunisolic Gray Luvisols occur throughout this ecosection and support mature aspen-white spruce communities. Aspen and lodgepole pine stands are not as prevalent and are generally associated with somewhat coarser and more acid materials. The dominant associations include white spruce-aspen, and to a much lesser extent, aspen/alder, lodgepole pine/alder and lodgepole pine-aspen.

Ecosection CHU.M3

Landform:

This very gently to moderately undulating and rolling (2-15%) upland plateau is faintly fluted and is overlain by thin morainal veneers. Acid shales of the Kaskapau Formation are very near the surface and as a result, surficial materials are extremely to strongly acid (pH 4.0-5.5) throughout. These materials are slightly stony and textures range from sandy loams to silty clay loams. Small wetland areas account for approximately 5% of the total area.

Ecological Conditions:

Mature white spruce and aspen forests occur across most of this ecosection with localized stands of lodgepole pine and aspen-balsam poplar. The dominant associations are white spruce/feathermoss, white spruce-aspen, aspen/alder and aspen/low-bush cranberry-rose/. The white spruce and white spruce-aspen forests have developed on well drained coarse textured Dystric Brunisols. Where surficial materials are somewhat finer, moderately well drained Orthic and Brunisolic Gray Luvisols support mature aspen forests with variable understories of alder, low-bush cranberry and rose. Small wetland areas where peaty Gleysols have developed support black spruce communities.

Land Use:

Portions of this ecosection have been harvested (Plate 13).

Ecosection CHU.M4

Landform:

This very gently to gently inclined (2-9% slope) landscape is overlain by slightly stony till deposits which range in texture from clay loam to silty clay loam. These materials are slightly acid (pH 6.0-6.5). The landscape is partially dissected by several small tributary streams of Keg River.

Ecological Conditions:

These north facing slopes are covered with young aspen forests, the dominant associations being aspen/buffalo-berry and aspen/low-bush cranberry-rose. They have developed on moderately well drained Orthic Gray Luvisols.

Ecosection CHU.MF1

Landform:

This very gently inclined (2-5% slope) topography is characterized by non-stony till deposits overlain in places by either fluvial veneers and blankets derived from slope wash or thin organic veneers where seepage is pronounced. These materials are moderately alkaline (pH 8.0) and range in texture from sandy loams to silty clay loam.

Ecological Conditions:

This landscape is dominated by mature white spruce-aspen forests that have developed mainly on imperfectly drained Gleyed Solonetzic Gray Luvisols (Plate 12). Where fluvial materials overlie till, Gleyed Cumulic Regosols support mature balsam poplar stands. Also, where groundwater seepage is pronounced, seepage willow communities have developed on peaty Gleysols. The major associations include white spruce-aspen and, to a much lesser extent, balsam poplar/red osier dogwood and seepage willow. Seepage is commonly encountered within the upper 50 cm of the soil throughout the ecosection.

Ecosection CHU.MGF1

Landform:

This fluted morainal upland area is overlain by thin sandy glaciofluvial veneers. Till deposits are moderately acid to moderately alkaline (pH 5.5-8.0) and range in texture from sandy clay to sandy clay loam. Numerous glacial meltwater channels are found within this ecosection and are now partially filled with accumulations of sedge and sphagnum peats. Surface expression is very gently to gently rolling (2-9% slope).

Ecological Conditions:

Lodgepole pine dominated forests occur across a significant portion of this ecosection, the dominant associations being lodgepole pine/alder and lodgepole pine-aspen. The aspen/alder association also occurs but to a limited extent. These forests have developed on well drained Eluviated Eutric Brunisols and Orthic and Brunisolic Gray Luvisols. Open black spruce and sedge communities have developed within meltwater channels where very poorly drained Mesisols and Fibrisols are found.

Ecosection CHU.MGF2

Landform:

This undulating to gently rolling (2-9% slope) upland area is mantled by morainal veneers and blankets which in turn are overlain in places by sandy glaciofluvial materials. These till deposits are virtually stone-free and vary from sandy loams to sandy clay loams. Soil acidity depends upon the presence and depth to the acid Kaskapau Formation. Sinuous glacial meltwater channels occur extensively throughout the ecosection and are partially filled with sedge and sphagnum peats. Slumping is common along these channels.

Ecological Conditions:

Mature aspen forests with understories of alder dominate this landscape. These forests have developed on moderately well to well drained Orthic Gray Luvisols and Eluviated Eutric Brunisols. Lodgepole pine-aspen and aspen-balsam poplar communities also occur, but to a lesser extent, and are generally indicative of moister conditions. Open black spruce communities have developed within meltwater channels where very poorly drained Mesisols and Fibrisols are found. The dominant association within this ecosection is aspen/alder.

Ecosection CHU.MX1

Landform:

These very gently to gently rolling and inclined (2-9% slope) upland areas occur atop the Clear Hills Upland and are characterized by slightly stony morainal veneers and blankets overlying residual shales of the acid Kaskapau Formation. Textures range from sandy loams to silty clay loam and pH's vary directly with the nearness of the bedrock to the surface. Several small ponds and glacial meltwater channels have partially infilled with sedge and sphagnum peats.

Ecological Conditions:

The dominant association within this ecosection is white spruce-aspen with a minor component of aspen/alder. These forests have developed on moderately well drained Orthic and Brunisolic Gray Luvisols. Small isolated stands of lodgepole pine are present atop Hawk Hills where residual bedrock materials are very near the surface and Eluviated Dystric Brunisols have developed. In areas where organic materials have accumulated, very poorly drained Mesisols and Fibrisols support open black spruce communities.

Land Use:

Portions of this ecosection west of the Meikle River have been thinned by selective cutting of white spruce.

Ecosection CHU.01

Landform:

While small wetland areas occur throughout the Clear Hills Upland, this ecosection includes those which are large enough to delineate at 1:100 000 scale. These horizontal to sloping (0-2% slope) fens are composed of sedge and sphagnum peats. Organic accumulations are of variable thickness and generally overlie till, lacustro-till or glaciofluvial deposits.

Ecological Conditions:

Open black spruce fens are the dominant community within these wetland areas. Depressional willow and sedge fens also occur, but are less extensive. These communities have developed on poorly drained peaty Gleysols and very poorly drained Mesisols, Fibrisols and Organic Cryosols. Gleysols often support depressional willow communities. Variable, but generally poor, nutrient regimes as well as cold air drainage and ponding are typical of these areas. The major association is black spruce/labrador tea/moss.

Ecosection CHU.OM1

Landform:

This nearly level to very gently undulating (0.5-2% slope) landscape consists of a complex of non-stony to slightly stony till deposits and organic accumulations of equal proportions. Till deposits are slightly acid to moderately alkaline (pH 6.0-8.0) throughout and textures range from silty clay loams to clay loam. Organic accumulations are of variable thickness and consist predominantly of peats of variable origin.

Ecological Conditions:

Young aspen communities with variable understories of low-bush cranberry, rose and buffalo-berry have developed on moderately well to imperfectly drained till deposits. Orthic and Gleyed Gray Luvisols predominate in these areas. Poorly drained wetlands are covered by depressional willow communities and, to a lesser extent, black spruce. These communities have developed on poorly to very poorly drained peaty Gleysols and Mesisols. The major associations include depressional willow and aspen/low-bush cranberry-rose and aspen/buffalo-berry.

5.2.2 Land Use Ratings

Table 16

LAND USE RATINGS FOR THE CLEAR HILLS UPLAND

	TILL CROPPING		FORESTRY			UNGULATES		
						MOOSE		MULE DEER
ECOSECTION	SOIL RATING SCHEDULE	STORIE INDEX	TOTAL MEAN ANNUAL INCREMENT	SITE INDEX	WHITE SPRUCE REGENERATION PROBABILITY	FALL/WINTER	SPRING/SUMMER	FALL/WINTER
CHU.CM1	NC	2-3	$M^{9}M(H)^{1}$	M	H	M	M(H)	M(H)
CHU.CX1	NC	2-3	$H^{7}M(H)^{3}$	$H^{5}M(H)^{2}M^{3}$	$L^{4}M^{3}H^{3}$	M	M	M
CHU.CX2	NC	1-2	$H^{6}M(H)^{2}M^{2}$	$H^{6}M(H)^{2}M^{2}$	$L^{6}M^{2}H^{2}$	M	M	M
CHU.GF1	NC	3	$H^{5}M^{5}$	$M(H)^{5}M(L)^{5}$	M	L	M(L)	M(L)
CHU.GF01	$NC^{6}L(L)^{4}$	$1^{6}3^{4}$	$M(H)^{3}M(L)^{2}L^{5}$	$M(H)^{3}M(L)^{2}L^{5}$	$L^{7}M^{3}$	H	H	M(H)
CHU.GF02	$NC^{4}L(L)^{6}$	3	$H^{6}L^{4}$	$M(H)^{6}L^{4}$	$M^{6}L^{4}$	L	M(L)	M(L)
CHU.GFX1	NC	1-2	$H^{6}M(H)^{3}M^{1}$	$M(H)^{6}M(L)^{4}$	M	M	M	M(L)
CHU.GL1	L(H)	5	$M^{9}M(H)^{1}$	$M^{9}M(H)^{1}$	M(H)	L	M(L)	M(L)
CHU.GL2	L(H)	5	$M^{7}M(H)^{3}$	M	H	L	L	L
CHU.GL3	L(L)	3	$H^{6}pp^{4}$	$H^{6}pp^{4}$	L	M(H)	M(H)	M
CHU.GL4	L(H)	5	$H^{7}M^{3}$	$H^{7}M^{3}$	$M^{7}H^{3}$	M	M(H)	M
CHU.M1	L(H)	5	M	M	$M(H)^{7}H^{3}$	L	M	M(L)
CHU.M2	L(L)	4	$M^{7}H^{2}M(H)^{1}$	$M^{8}M(H)^{2}$	$H^{7}M^{2}M(H)^{1}$	L	M(L)	M(L)
CHU.M3	NC	1-2	$M^{5}M(H)^{3}H^{2}$	$M^{8}H^{2}$	$H^{8}M^{2}$	L	M	M
CHU.M4	L(H)	5	M	M	M-H	L	M(L)	L
CHU.MF1	L(M)	4	$M^{8}M(H)^{1}pp^{1}$	$M^{8}M(H)^{1}pp^{1}$	$H^{8}L^{2}$	H	H	M(H)
CHU.MGF1	L(M)	4	$M(H)^{8}H^{1}L^{1}$	$M(H)^{5}M^{4}L^{1}$	$M^{7}H^{2}L^{1}$	L	M	L
CHU.MGF2	L(M)	4	$H^{8}L^{2}$	$M(H)^{6}H^{2}L^{2}$	$M^{6}L^{4}$	M	M	M
CHU.MX1	$NC^{8}L(M)^{2}$	$2^{8}4^{2}$	$M^{7}H^{2}L^{1}$	$M^{7}M(H)^{2}L^{2}$	$H^{7}M^{2}L^{1}$	M	M(H)	M
CHU.O1	NC	1	L	L	L	L	L	M(L)
CHU.OM1	$NC^{5}L(H)^{5}$	$1^{5}5^{5}$	$M^{5}L^{5}$	M^{55}	$M(H)^{5}L^{5}$	H	H	M(H)

Till Cropping

With the exception of the soils in ecosection CHU.GL3, all soils within ecosections in the lower slopes of the Clear Hills Upland have been rated as marginal to fairly good arable. This is especially true of the ecosections adjacent to the Peace River Lowlands. Limitations within these ecosections include low soil fertility and long gentle slopes which are susceptible to water erosion. In particular, unfavorable soil structures are common to ecosections CHU.GL1 and CHU.M1. Also, groundwater seepage is common in the soils of ecosection CHU.GL4 and CHU.MF1 while acid soils appear to be local problems in both CHU.GL2 and CHU.M4.

Other ecosections including CHU.GL3 have all been rated as non arable. Limitations include mainly low soil fertility, extremely acid (4.0-4.5) soils and unfavorable slopes. Local constraints may include one or more of the following: shallow soils, coarse textured materials, pronounced groundwater seepage and coarse fragment content. Organic accumulations in excess of 40 cm were also considered non-arable.

Forestry

The cool, moist north and east facing slopes of the Naylor and Hawk Hills (CHU.CX1, CHU.CX2, CHU.GL4) are judged to be highly productive relative to other ecosections within the study area. Moderately high productivity may be expected in other seepage areas (CHU.GL3) and on ecosections with coarse textured veneers overlying finer textured materials (CHU.GFX1, CHU.MGF1 and CHU.MGF2). Where organic terrain forms a significant component of the ecosection

(CHU.GF01, CHU.GF02, CHU.OM1, CHU.01), productivity is ranked as moderate low to low. All other ecosections are ranked as moderately productive.

In general, the probability of finding white spruce regeneration is lower within ecosections dominated by glaciofluvial, colluvial and organic materials.

Ungulates

Moose. Favorable interspersion and juxtaposition with abundant food and cover have combined to produce moderate high to high year-round ratings for ecosections CHU.GF01, CHU.OM1, CHU.MF1 and CHU.GL3. Other ecosections have been rated as either moderate or low for the fall/winter period and have been ranked slightly higher for the spring/summer period on the basis of grass and forb production. Ecosections rated as low for the fall/winter period and moderate low for the spring/summer period provide only cover requirements. Also, both interspersion and juxtaposition are rated as unfavourable in these landscapes.

Mule Deer. No ecosections within the Clear Hills Upland were rated as having a high fall/winter habitat suitability for mule deer; however, ecosections CHU.CM1, CHU.GF01, CHU.OM1 and CHU.MF1 were rated as moderate high on the basis of meeting the food and cover requirements of the animal. With the exception of ecosections CHU.GL2, CHU.M4 and CHU.MGF1, all others were rated as moderate to moderate low. Originally, all ecosections with the exception of those having south and southwest exposures, were down-ranked one class (moderate to moderate low) to account for winter weather severity.

5.3 Fort Vermilion Lowlands Physiographic Region

The Fort Vermilion Lowland physiographic region has been differentiated into two physiographic subregions on the basis of bedrock geology and surficial materials. The two subregions include the High Level Plain and the Chinchaga Plain.

5.3.1 High Level Plain Physiographic Subregion (HLP)

The High Level Plain occurs north of the Clear Hills Upland and extends northward from the basin-like area between Hawk and Naylor Hills to the northern edge of the study area and extends approximately 3 km west of Keg River to where it abuts the Chinchaga Plain. The subregion slopes to the north and east from 530 masl adjacent to the Clear Hills Upland to 380 masl in the northeast corner of the study area. The topography is nearly level to very gently undulating. Shales and siltstones of the Lower Cretaceous Loon River Formation are mantled by extensive fine to very fine textured glaciolacustrine sediments with scattered organic accumulations of sedge and sphagnum peats. "Humpy doughnut" topography consisting of subdued, circular hummocky terrain with collapsed centres is common northeast of the Keg River.

Gleyed Gray Luvisols and Orthic Luvic Gleysols are the modal soils that develop within glaciolacustrine materials and generally reflect the occurrence of perched water tables throughout most of the subregion. These conditions arise because of seepage from the adjacent Clear Hills Upland combined with fine-textured, slowly permeable parent materials which restrict percolation. Solonetzic Gray Luvisols are associated with the well-drained portions of "humpy doughnuts." Extensive wetland terrain with organic veneers and blankets and fluvial materials derived from slope wash have developed at the base of the Clear Hills Upland. In these areas, peaty Gleysols and Mesisols have developed. Organic Cryosols are found in association with Mesisols in organic wetlands northeast of Keg River.

The High Level Plain receives in approximately 260 mm of precipitation during the May to September period and has a frost-free period of between 50 and 80 days; the lower values are associated with frost hollows. The average number of growing degree days is approxiamtely 1 130. The subregion experiences a moisture deficit in the order of 228 mm for the May to September period.

Aspen forests typical of the Boreal Mixedwood Ecoregion occur across much of the High Level Plain. These forests are relatively productive with low-bush cranberry, rose and red osier dogwood as common understory components. In wetland areas the vegetation consists of a complex of willow-black spruce and sedge-dominated communities. Approximately 11 000 ha of land in the vicinity of Keg River has been cleared and cultivated for the production of annual cereal crops, oil seeds and forage crops.

Early surveys (Wyatt and Leahy, 1929; Groh, 1949 and Moss, 1953a) have indicated that an area of native grasslands existed in a band along the Boyer River, extending from Keg River northeast to Paddle Prairie. These grasslands developed on chernozemic-type soils and were the first lands cultivated in the area.

Figure 5.3.1 is a schematic diagram of the High Level Plain and some of its component ecosections.

5.3.1.1 Ecosection Descriptions

Ecosection HLP.F1

Landform:

These level to very gently undulating (0-2% slopes) fluvial terraces occur adjacent to the Kemp River. Silt loams overlie moderately alkaline (pH 8.0) sands.

Ecological Conditions:

Stands belonging to the white spruce and white spruce-aspen associations have developed on moderately well drained Orthic and Cumulic Regosols. These stands are characterized by relatively sparse understories with thick organic (LFH) horizons.

Ecosection HLP.FGL1

Landform:

This ecosection is comprised of low gradient fluvial fans overlying clayey glaciolacustrine materials at the base of the

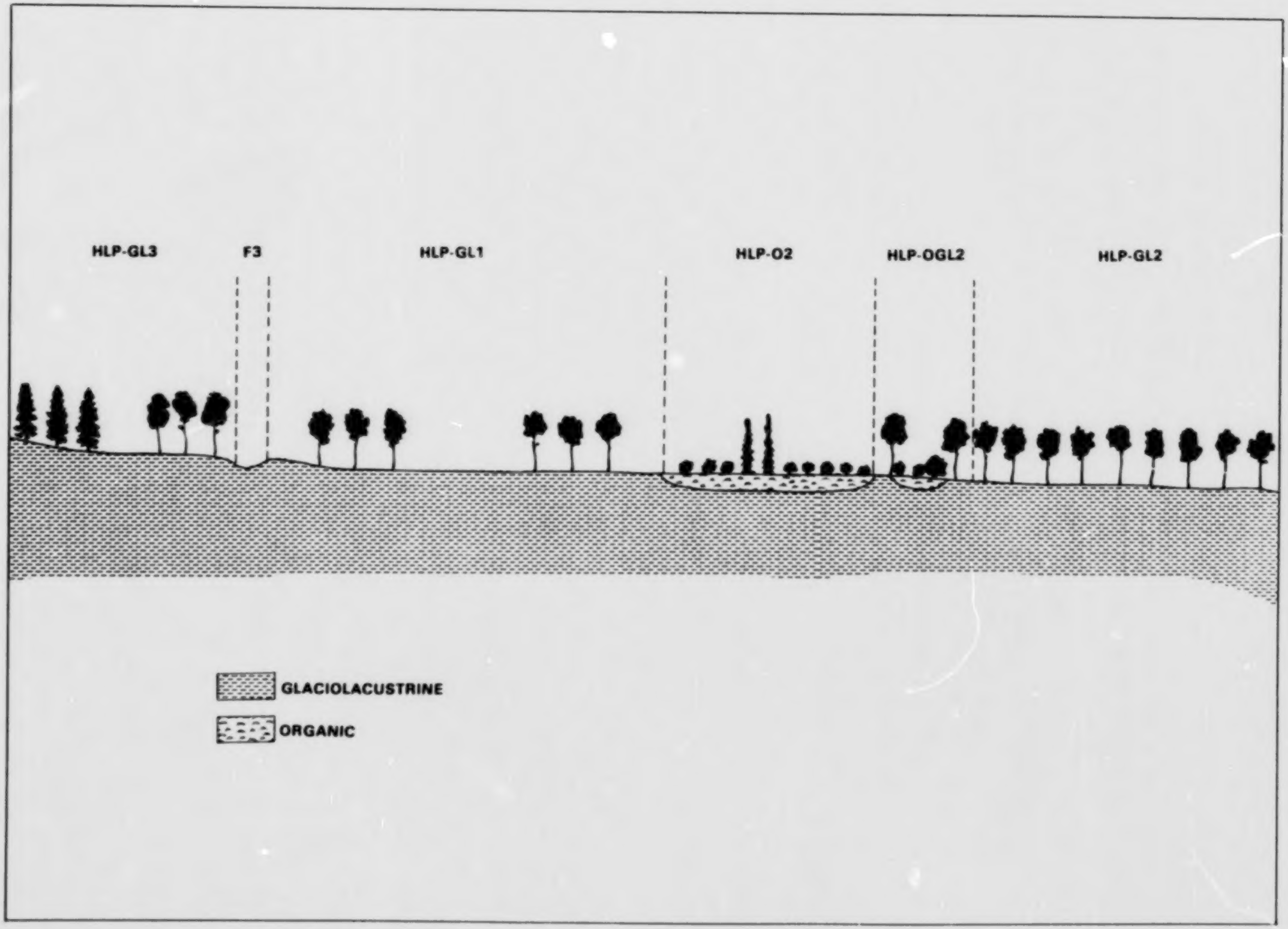

HLP-GL3
F3
HLP-GL1
HLP-O2
HLP-OGL2
HLP-GL2
GLACIOLACUSTRINE
ORGANIC

Figure 5.3.1 SCHEMATIC DIAGRAM OF THE HIGH LEVEL PLAIN PHYSIOGRAPHIC SUB-REGION

Clear Hills Upland. Loamy fluvial materials are derived from slope wash. Matrials are neutral to moderately alkaline (pH 6.5-8.0) throughout. Surface expression is nearly level to very gently inclined (0.5-5% slope).

Ecological Conditions:

Pronounced groundwater seepage from the Clear Hills Upland has contributed to the development and maintenance of stands belonging to the aspen-balsam poplar and white spruce associations. These stands have developed on imperfectly to poorly drained peaty Gleysols where LFH horizons approach 40 cm in thickness. White spruce-aspen, seepage willow and aspen communities with variable understories of low-bush cranberry, rose and red osier dogwood also occur, but to a lesser extent.

Land Use:

Portions of these forests have been harvested for lumber production.

Ecosection HLP.GL1

Landform:

This ecosection occurs in a narrow band extending along the Kemp River and opening westward towards the Chinchaga Plain. Level to very gently undulating (0-5% slope) topography characterizes this glaciolacustrine plain. Surficial materials are slightly acid to moderately alkaline (pH 6.0-8.0) throughout and textures range from silty clay to clay.

Ecological Conditions:

A significant portion of the landscape west of Highway 35 has been cleared and cultivated for annual cereal crops, oilseeds and forage production (Plate 14). Areas not under cultivation are covered with aspen communities belonging to the Aspen/Low-bush cranberry-Rose associations. These forests have developed on imperfectly to poorly drained Gleyed Gray Luvisols and Orthic Luvic Gleysols. The fine textured nature of the parent materials promotes the development of perched water tables, especially during the early part of the growing season.

Ecosection HLP.GL2

Landform:

Subdued "humpy doughnut" topography characterizes this nearly level to gently undulating (0.5-5% slope) landscape (Plate 15). The strongly coalesced nature of these humpy doughnuts results in less than 5% wetland terrain. Glaciolacustrine materials are slightly acid to moderately alkaline (pH 6.0-8.0) and textures range from clay loams to silty clay.

Ecological Conditions:

Moderately well drained Orthic and Solonetzic Gray Luvisols are the modal soils. They support young aspen communities belonging to the aspen/buffalo-berry and aspen/low-bush cranberry-rose associations. In depressional areas where the water table is nearer the surface, aspen-balsam poplar communities have developed. These stands have developed on imperfectly drained

Gleyed Gray Luvisols and poorly drained Orthic Luvic Gleysols.

Land Use:

A significant portion of this landscape has been cleared in recent years.

Ecosection HLP.GL3

Landform:

This level to very gently inclined (0-5% slopes) landscape occurs between the base of the Naylor Hills and the Keg River. It is characterized by neutral to moderately alkaline (pH 6.5-8.0) glaciolacustrine materials which range in texture from loam to silty clay loam. Pockets of sandy glaciofluvial materials are common adjacent to subdued, intermittent stream courses.

Ecological Conditions:

Fire history and groundwater seepage have played a significant role in the ecology of this landscape. Pronounced groundwater seepage from the adjacent Naylor Hills has resulted in the development of poorly drained Luvic and Humic Gleysols across most of the landscape. Where drainage is better, Orthic and Dark Gray Luvisols have developed. Similarily, well drained Cumulic Regosols have developed in glaciofluvial deposits. Current vegetation reflects the combined influences of fire and groundwater seepage. The vegetation varies from white spruce to willow shrublands and aspen-balsam poplar communities. Mature white spruce and white spruce-paper birch forests occur in the eastern portion while aspen-balsam poplar, willow shrublands and seepage willow, depressional and willow communities occur mainly in the western portion. The dominant associations include White spruce, aspen-balsam poplar, seepage willow and willow shrublands.

Land Use:

White spruce is being harvested for lumber production.

Ecosection HLP.GL01

Landform:

A complex of glaciolacustrine and organic materials characterize this level to very gently undulating (0-2% slope) landscape at the base of the Clear Hills Upland. Glaciolacustrine materials are slightly acid to moderately alkaline (pH 6.0-8.0) throughout and range in texture from silty clays to clay. Organic accumulations which account for approximately 25% of all surficial materials have developed as a result of pronounced groundwater seepage combined with the underlying fine textured materials which impede drainage.

Ecological Conditions:

Aspen communities belonging to the aspen/low-bush cranberry-rose-red osier dogwood association have developed on imperfectly to poorly drained Gleyed Gray Luvisols and Orthic Luvic Gleysols. Perched water tables are common especially during the early part of the growing season. Very poorly drained Mesisols support communities of the black spruce/labrador tea/moss association and, to a lesser extent, Depressional willow shrublands.

Ecosection HLP.GL02

Landform:

This nearly level to very gently undulating (0.5-5% slope) landscape is characterized by subdued "humpy doughnut" topography with approximately 20% wetland terrain (Plate 16). Surficial materials include slightly acid to moderately alkaline (pH 6.0-8.0) glaciolacustrine materials which range in texture from silty clay loam to clay. Organic accumulations are found in depressional areas surrounding "humpy doughnuts."

Ecological Conditions:

Closed aspen stands belonging to the aspen/low-bush cranberry-rose and the aspen/buffalo-berry associations have developed on moderately well drained Solonetzic and Dark Gray Luvisols. In depressional areas, very poorly drained Mesisols support depressional willow communities, and less frequently, open black spruce. The dominant wetland association is Willow shrubland.

Land Use:

Portions of this landscape have been cleared in recent years.

Ecosection HLP.01

Landform:

Horizontal and patterned fens with small glaciolacustrine islands combine to make up this ecosection. Accumulations are comprised of sedge and moss peats and vary in thickness from 40 cm to in excess of 160 cm. These organic materials are underlain by very fine textured glaciolacustrine materials.

Ecological Conditions:

Pronounced groundwater seepage from the adjacent Hawk Hills contributes to relatively rich site conditions which support a mixture of willow shrubland, black spruce and sedge communities. These communities have developed on very poorly drained Fibrisols and Mesisols. The dominant association is willow shrubland. The black spruce/Labrador tea/moss and sedge fen associations also occur, but to a lesser extent. On small glaciolacustrine islands, imperfectly drained Gleyed Gray Luvisols support aspen-balsam poplar communities.

Ecosection HLP.02

Landform:

This ecosection is composed of nutrient-poor horizontal fens. Organic materials are composed of decomposed sedges and grasses and, to a lesser extent, moss peats. These organic veneers and blankets are underlain at depth by very fine textured glaciolacustrine materials. Surface expression is horizontal to sloping (0-2%).

Ecological Conditions:

These nutrient-poor fens support communities belonging to the willow shrubland association and, to a lesser extent, black spruce/labrador tea/moss. These communities have developed on very poorly drained Mesisols and Organic Cryosols. Frozen soil was observed at 50 cm at one site in August.

Ecosection HLP.OF1

Landform:

Occurring at the base of the Naylor Hills and extending east towards the Kemp River, this landscape is characterized by a complex of nutrient-rich horizontal fens and low gradient fluvial fans overlying clay-rich glaciolacustrine materials. Organic materials are composed of decomposed sedges, grasses and moss. Loamy fluvial materials derived from slope wash are moderately alkaline (pH 8.0). Surface expression is very gently to gently inclined (2-9% slope).

Ecological Conditions:

Pronounced groundwater seepage from the adjacent Naylor Hills has allowed for the development of poorly to very poorly drained peaty Gleysols and Fibrisols. Organic soils primarily support willow shrubland and seepage willow communities and, to a lesser extent, black spruce communities. The seepage willow communities are found at the base of the Naylor Hills, whereas shrubland willow communities occur further away. A mixture of white spruce, aspen and balsam poplar communities are found on mineral soils. The dominant associations include seepage willow, willow shrubland, aspen-balsam poplar, aspen/low-bush cranberry-rose-red osier dogwood and white spruce.

Ecosection HLP.OGL1

Landform:

This level to very gently inclined and undulating (0-2% slope) landscape consists of a complex of patterned fens intermixed with equally occurring portions of glaciolacustrine materials. Organic veneers and blankets are composed mainly of moss peats. Clay loam glaciolacustrine materials are slightly acid to moderately alkaline (pH 6.0-8.0) throughout.

Ecological Conditions:

A high water table has contributed to the development of very poorly drained organic soils and imperfect to poorly drained mineral soils. This may be attributed to mineral-rich groundwater seepage from the adjacent Hawk and Naylor hills. Black spruce communities have developed on Mesisols while mature aspen-balsam poplar and white spruce stands have developed on Gleyed Gray Luvisols and peaty Gleysols. The presence of larch and willow in black spruce communities and red osier dogwood and tall larkspur in the aspen-balsam poplar understories suggests that both organic and mineral soils are relatively nutrient rich. The dominant associations include black spruce/labrador tea/moss, aspen-balsam poplar and white spruce.

Land Use:

Portions of the white spruce stands have been harvested for timber production.

Ecosection HLP.OGL2

Landform:

This "humpy doughnut" landscape is characterized by equally occurring portions of horizontal, nutrient-poor fens and gently undulating (5-9% slope) glaciolacustrine materials. Organic veneers and blankets are composed of decomposed sedges, grasses and moss peats while glaciolacustrine materials are slightly acid to moderately alkaline (pH 6.0-8.0) and range in texture from silty clay loam to silt loam.

Ecological Conditions:

Depressional willow and black spruce communities have developed on very poorly drained Mesisols and Organic Cryosols; the latter community type occurs mainly near "humpy doughnuts." Solonetzic Gray Luvisols have developed on moderately well drained glaciolacustrine materials and support young aspen communities. The dominant associations include depressional willow and aspen/buffalo-berry and to a lesser extent, black spruce/labrador tea/moss and aspen/low-bush cranberry-rose.

5.3.1.2 Land Use Ratings

Table 17

LAND USE RATINGS FOR THE HIGH LEVEL PLAIN

ECOSECTION	TILL CROPPING		FORESTRY			UNGULATES		
	SOIL RATING SCHEDULE	STORIE INDEX	TOTAL MEAN ANNUAL INCREMENT	SITE INDEX	WHITE SPRUCE REGENERATION PROBABILITY	MOOSE FALL/WINTER	MOOSE SPRING/SUMMER	MULE DEER FALL/WINTER
HLP.F1	L(L)	4	M^7H^3	$M^7M(H)^3$	H	L	L	L
HLP.FGL1	L(L)	4	M^6H^4	$M^3M(H)^3M^4$	H^7L^3	M	M	M
HLP.GL1	M	5	H	H	L	M-L	M-L	M-L
HLP.GL2	M	5	M^6H^4	M^6H^4	M^4L^6	L	L	M
HLP.GL3	L(L)	5	$M(H)-H^8pp2$	$M-M(H)^5H^3pp2$	H^5L^5	M(H)	M(H)	M
HLP.GLO1	$L(H)^7NC^3$	5^71^3	H^6L^4	H^6L^4	L	M	M	M
HLP.GLO2	M^8NC^2	5^81^2	M^8L^2	M^8L^2	$M-H^8L^2$	M(L)	M(L)	M(L)
HLP.O1	NC	1	L	L	L	M	M	M(L)
HLP.O2	NC	1	L	L	L	M	M	L
HLP.OF1	$L(H)^5NC^5$	5^51^5	L^6H^4	$H^3M(H)^1L^6$	L^9H^1	M	H	M
HLP.OGL1	M^5NC^5	5^51^5	$L^4H^4M(H)^2$	$L^4H^4M^8$	L^8H^2	M	M	M(L)
HLP.OGL2	$L(H)^5NC^5$	5^51^5	M^5L^5	M^5L^5	$M-H^5L^5$	M(L)	M	M

Till Cropping

All mineral soils in the High Level Plain, with the exception of those that are either medium or coarse textured, have been rated as good to fairly good arable soils. The main limitations of these soils are low soil fertility and unfavorable soil structure, which promote the development of perched water tables, especially during the early part of the growing season. Where soils are coarser textured (HLP.F1, HLP.FGL1) they have been rated as marginal arable soils. Organic soils, which may form upwards of 50% of all soils within certain ecosections (HLP.GLO1, HLP.GLO2, HLP.O1, HLP.O2, HLP.OF1, HLP.OGL1, HLP.OGL2) have been rated as non-arable and, for this reason, dual rankings are given to ecosections with both mineral and organic soils. In these particular ecosections, mineral soils are often discontinuous and hence present a problem for operations.

Forestry

Forest productivity based on mean annual increment and site index is rated as moderate to high for those stands that have developed on mineral soils. Productivity is generally rated as low for wetland areas. Small seepage willow communities (HLP.GL3) have been rated as potentially productive.

The probability of white spruce regeneration is highest under white spruce stands (HLP.F1) and in areas where groundwater seepage is common (HLP.GFL1, HLP.GL3). Wetland areas supporting either black spruce (HLP.O1) or willow shrublands (HLP.O2) have a low probability of white spruce regeneration as do areas that have been cultivated (HLP.GL1). All other ecosections are rated as either moderate or as having combination of all three ratings.

Ungulates

Moose. Ecosections HLP.OF1 and HLP.GL3 have been rated as high and moderately high, respectively, for year-round habitat because they provide a favorable combination of food and cover. Cultivated lands (HLP.GL1, HLP.GL2) and closed coniferous forests (HLP.F1) have been rated as low. Other ecosections are rated as either moderate or moderately low and provide either food or cover requirements but not both. These areas, however, usually have a favorable juxtaposition.

Mule Deer. The juxtaposition and interspersion of cultivated lands with forested areas (HLP.GL1, HLP.GL2) provide habitat of moderate quality during the fall/winter period for mule deer. Habitats of moderate quality (HLP.FGL1, HLP.GL3, HLP.OF1, HLP.OGL2) are also found in areas where forest and shrubland communities provide either food or cover requirements and have a favorable juxtaposition. Other areas were rated as either moderately low or low. Ratings were down-ranked by one class (moderate to moderately low) to account for winter weather severity.

5.3.2 Chinchaga Plain Physiographic Subregion (CP)

The Chinchaga Plain occurs in the northwestern portion of the study area and slopes gently down towards the north from 550 masl adjacent the Clear Hills Upland to 425 masl at the Chinchaga River. It is underlain by Lower Cretaceous shales of the Lower Shaftesbury Formation. These are overlain in turn by a thin mantle of slightly stony till. Fine textured glaciolacustrine veneers and blankets overlie these till deposits adjacent the High Level Plain. In addition, organic accumulations as veneers and blankets cover much of this subregion.

The relatively fine textured nature of the mineral materials combined with pronounced groundwater discharge from the adjacent Clear Hills Upland has promoted the subsequent development of perched water tables within mineral soils and the development of extensive patterned fens.

Orthic and Dark Gray Luvisols and Orthic Luvic Gleysols are the modal soils that have developed within till and glaciolacustrine materials. Parent materials are slightly acid (pH 6.0) to moderately alkaline (pH 8.0) and are moderately fine to fine textured. In wetland areas, peaty Humic and Rego Gleysols are found in association with Mesisols and Organic Cryosols.

The Chinchaga Plain receives on average 230 mm of precipitation during the May to September period and has an estimated frost-free period of approximately 80 days. The average number of growing degree days is approximately 1 130. It also experiences a moisture deficit for the May to September period of roughly 220 mm.

Young to mature aspen communities typical of the Boreal Mixedwood Ecoregion occur across this landscape. Understories include variable proportions of low-bush cranberry, rose and buffalo-berry. High soil moisture and poor drainage conditions encourage the development of balsam poplar and paper birch stands, willow shrublands and black spruce communities. Much of this subregion was burned in 1950.

Figure 5.3.2 is a schematic diagram of the Chinchaga Plain physiographic subregion.

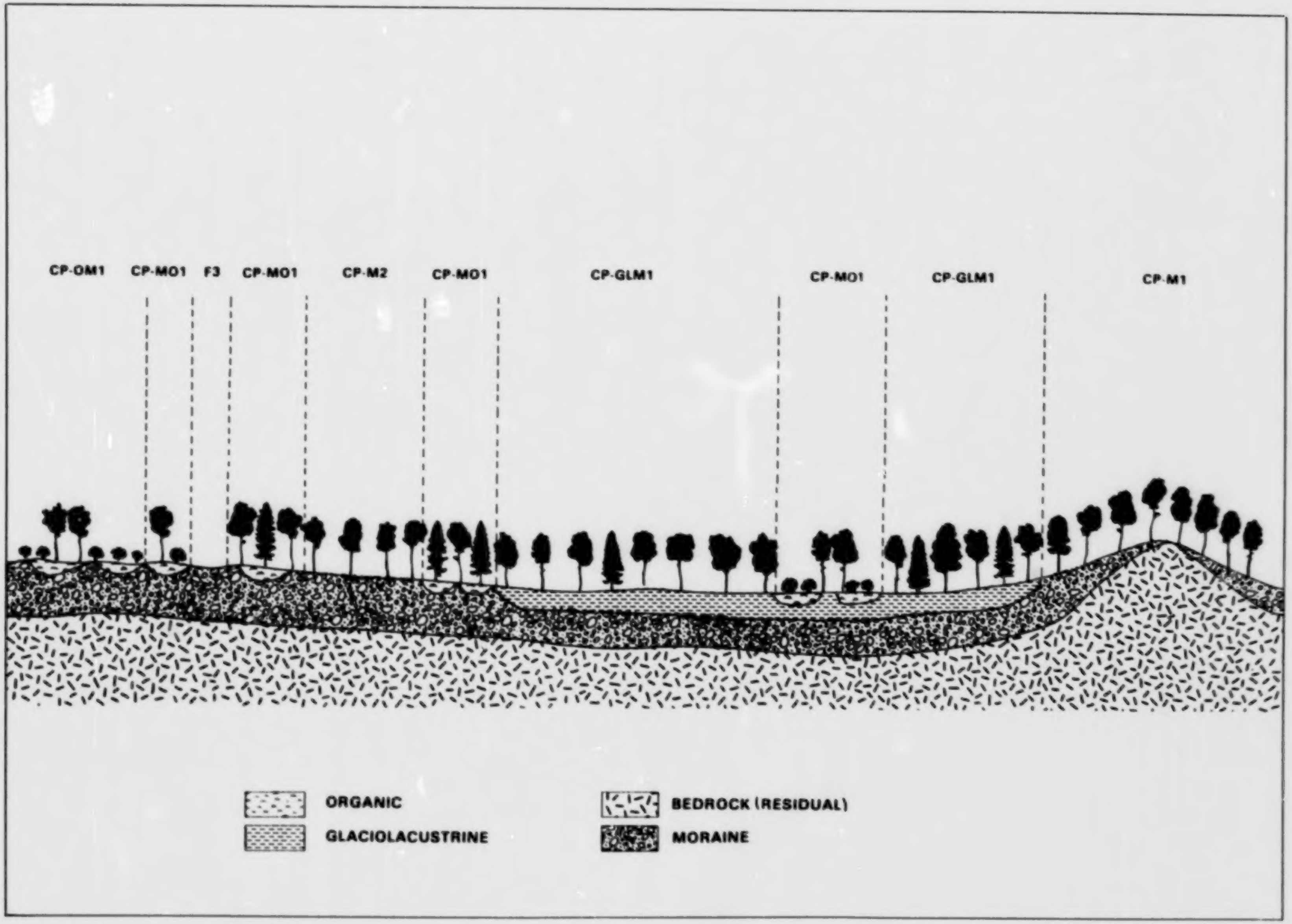

CP-OM1
CP-MO1
F3
CP-MO1
CP-M2
CP-MO1
CP-GLM1
CP-MO1
CP-GLM1
CP-M1
ORGANIC
GLACIOLACUSTRINE
BEDROCK (RESIDUAL)
MORAINE

Figure 5.3.2 SCHEMATIC DIAGRAM OF THE CHINCHAGA PLAIN PHYSIOGRAPHIC SUB-REGION

5.3.2.1 Ecosection Descriptions

Ecosection CP.FM1

Landform:

This gently inclined (5-9%) landscape at the base of the Naylor Hills is characterized by fluvial veneers derived from slope wash overlying till deposits. Materials are neutral to moderately alkaline (6.5-8.0) and range in texture from loam to silty clay loams.

Ecological Conditions:

Pronounced groundwater seepage has promoted the development of communities belonging to the seepage willow association. Understory species include red osier dogwood, gooseberry, low-bush cranberry, tall larkspur and reed grass. These shrublands have developed on poorly drained Humic and peaty Gleysols.

Ecosection CP.FM2

Landform:

Very gently to gently inclined (2-9%) topography characterizes this landscape with fluvial veneers derived from slope wash overlying till deposits at the base of the Naylor Hills. Surficial materials are neutral to moderately alkaline (6.5-8.0) and range in texture from loam to silty clay loam.

Ecological Conditions:

Groundwater seepage is not as pronounced in this ecosection as in the adjacent ecosection CHU.FM1. Maturing aspen forests of the aspen/low-bush cranberry-rose-red osier dogwood association occur across the landscape. Balsam poplar becomes a common component of the aspen overstories where seepage is more pronounced. These forests have developed on imperfectly to poorly drained Gleyed Cumulic Regosols and Orthic Luvic Gleysols.

Ecosection CP.GLM1

Landform:

This ecosection is characterized by glaciolacustrine veneers and blankets overlying nearly level to very gently inclined (2-5% slope) till deposits. The thickness of the glaciolacustrine materials increases with distance from the Clear Hills Uplands. The clay loam to silty clay glaciolacustrine materials are slightly acid to moderately alkaline (pH 6.0-8.0). Non-stony to very slightly stony till deposits are composed of moderately acid to moderately alkaline (pH 5.5-8.0) sandy clay loams.

Ecological Conditions:

Aspen forests cover much of this landscape; low-bush cranberry and rose are constant understory species. White spruce is often mixed with aspen adjacent to the Keg River, while balsam poplar achieves codominance with aspen adjacent to wetland terrain. These forests have developed on moderately well drained Dark

Gray Luvisols and poorly drained Orthic Luvic Gleysols. The occurrence of Luvic Gleysols suggests the presence of perched water tables early in the growing season. Soil moisture conditions increases towards the base of the Naylor Hills. The dominant associations include aspen/low-bush cranberry-rose and to a much lesser extent, white spruce-aspen and aspen-balsam poplar/red osier dogwood and aspen/ buffalo-berry.

Ecosection CP.M1

Landform:

This very gently rolling to gently inclined (2-9% slope) bedrock ridge is overlain by relatively stone-free till deposits. On crest positions where acidic shales of the Kaskapau Formation are very near the surface, tills are extremely acid (pH 4.0). On side slopes where till deposits are somewhat thicker, moderately acid (pH 5.5-6.0) conditions prevail. These deposits range in texture from silty clay loam to clay.

Ecological Conditions:

Moderately well drained Orthic and Dark Gray Luvisols are the dominant soils across this landscape and support closed aspen forests of variable ages and understories. On crest positions where acid shales are very near the surface, stands belonging to the aspen/alder association have developed, while stands of the aspen/buffalo-berry association have developed on side slopes. On lower slopes, continuous seepage from upland areas has resulted in the development of Orthic Luvic Gleysols. In these areas, willow, kidney-leaved violet and brown moss are common understory components which are indicative of consistently high soil moisture.

Ecosection CP.M2

Landform:

This level to very gently undulating (0-5% slope) till plain occurs extensively throughout the western portion of the Chinchaga Plain. Moderately alkaline (pH 8.0) till deposits are composed mainly of clay loams and are characterized by a highly variable stone content. East of Haro River, these deposits are virtually stone-free, while moderately stony conditions are common west of the Haro River. Discontinuous fluvial veneers commonly overlie till deposits adjacent to stream courses, especially the Chinchaga River.

Ecological Conditions:

Young aspen communities have developed across the entire landscape, the dominant association being aspen/buffalo-berry. These forests have developed on moderately well drained Orthic, Solonetzic and Dark Gray Luvisols and poorly drained Orthic Luvic Gleysols. The high proportion of deadfall within these forests suggests that the 1950 fire was not intense enough to burn the existing white spruce stands fully.

Land Use:

Portions of this landscape have been cleared and replanted with white spruce seedlings for the Maintain Our Forest (MOF) program (Plate 17).

Ecosection CP.M01

This level to very gently undulating (0-5% slope) till plain is an extension of CP.M2. However, it differs significantly in that approximately 35% of the area is characterized by small horizontal and domed fens. Till deposits are moderately alkaline (pH 8.0) and are generally composed of clay loams. Organic veneers and blankets are derived from decomposed sedge, grasses and mosses.

Ecological Conditions:

This landscape is characterized by a relatively high water table and, as a result, poorly to very poorly drained mineral and organic soils have developed. Peaty phase Orthic and Rego Gleysols dominate on mineral materials while Mesisols and, to a lesser extent, Organic Cryosols dominate on organic accumulations. Organic Cryosols are commonly associated with nutrient-poor domed fens and support stands belonging to the black spruce/Labrador tea/moss association. These areas have low nutrient status because they tend to be removed from mineral-rich groundwaters. Seepage willow, balsam poplar and paper birch communities have developed throughout the area on mineral soils; the dominant associations are seepage willow and balsam poplar/red osier dogwood. Organic areas support shrublands of the depressional willow associations (Plate 18).

Ecosection CP.01

Landform:

While scattered organic pockets of decomposed moss peats occur throughout the Chinchaga Plain, most are either too small to be delineated at 1:100 000 or have been complexed with other surficial materials. Where these have been mapped separately, organic accumulations are of variable thickness and are generally underlain by moderately fine-textured till deposits. Surface expression is horizontal to very gently sloping (0-2% slope).

Ecological Conditions:

High water tables have resulted in the development and maintenance of these scattered organic pockets. Very poorly drained Mesisols support black spruce communities; the dominant association is black spruce/Labrador tea/moss.

Ecosection CP.OM1

Landform:

This nearly level to very gently undulating (0.5-2% slope) landscape consists of a complex of well-developed patterned fens intermixed with slightly elevated till deposits. Organic veneers and blankets consist of decomposed sedges, grasses and mosses. Moderately alkaline (pH 8.0) till deposits are composed mainly of slightly stony clay loams.

Ecological Conditions:

The ribbing within these fens is oriented downslope rather than across slope which is the more usual situation. These fens are maintained by groundwater seepage from the adjacent Naylor Hills. Very poorly drained Humisols and Mesisols dominate in these wetland areas and generally support shrub communities belonging to the seepage willow and depressional willow associations; the latter occurs further away from the base of the Naylor Hills. Although Organic Cryosols were not encountered, it is believed that they do occur in combination with other organic soils. On slightly elevated positions within the wetland areas, stands belonging to the black spruce/Labrador tea/moss association have developed on peaty Rego Gleysols. On moderately well drained till deposits, young aspen communities have developed on Orthic and Dark Gray Luvisols, the dominant association being aspen/buffalo-berry.

5.3.2.2 Land Use Ratings

Table 18

LAND USE RATINGS FOR THE CHINCHAGA PLAIN

ECOSECTION	TILL CROPPING		FORESTRY			UNGULATES		
						MOOSE		MULE DEER
	SOIL RATING SCHEDULE	STORIE INDEX	TOTAL MEAN ANNUAL INCREMENT	SITE INDEX	WHITE SPRUCE REGENERATION PROBABILITY	FALL/WINTER	SPRING/SUMMER	FALL/WINTER
CP.FM1	NC	3	PP	PP	L	H	H	M(H)
CP.FM2	L(H)	4	H	H	L	M	M(H)	M
CP.GLM1	M	5	$M^{9}L^{1}$	$M^{9}L^{1}$	$M\text{-}H^{7}H^{2}L^{1}$	L	M(L)	L
CP.M1	$M^{5}NC^{5}$	$5^{5}2\text{-}3^{5}$	$M^{6}H^{4}$	$M^{6}M(H)^{4}$	M	L	M(L)	L
CP.M2	M	5	M	M	M	L	M(L)	L
CP.MO1	$M^{6}NC^{4}$	$5^{6}1^{4}$	$L^{5}H^{4}pp^{1}$	$L^{5}H^{4}pp^{1}$	L	M(H)	H	M
CP.O1	NC	1	$L^{9}M(H)^{1}$	$L^{9}M^{1}$	$L^{9}H^{1}$	L	L	L
CP.OM1	NC	1	$L^{8}M^{2}$	$L^{8}M^{2}$	$L^{8}M^{2}$	M	M(H)	M(L)

Till Cropping

A significant portion of the Chinchaga Plain has been rated as having marginal to fairly good arable soils (CP.FM2, CP.GLM1, CP.M1, CP.M2, CP.MO1), the primary limitation being low soil fertility. Local constraints to till cropping include slope (CP. FM1, CP.FM2, CP.M1), groundwater seepage (CP.FM1, CP.FM2, CP.GLM1), acid soils (CP.M1) and coarse fragment content (CP.M2). Deep organic accumulations, cold soil temperatures, seasonally high water tables and very poor drainage combine to delimit the soils of ecosections CP.O1 and CP.OM1 and portions of CP.MO1 as being non-arable.

Forestry

Areas receiving mineral-rich groundwater seepage (CP.FM1, CP.FM2, CP.GLM1, CP.M1, CP.M2, CP.MO1) have been rated as having moderate to high productivity based on mean annual increment and site index. Seepage willow communities are rated as being potentially productive. Areas supporting wetland vegetation are rated as having low productivity.

In general, the probability of white spruce regeneration is rated as being moderate to low. This may be attributed to recent fires (1950) and distance to seed source.

Ungulates

Moose. Ecosections CP.FM1 and CP.MO1 have been rated as providing moderate high to high year-round habitat for moose. These areas provide a favorable combination of food and cover. All other ecosections have been rated as either moderate or low for the fall/winter period and have been rated slightly higher (low to moderately low) for the spring/summer period.

Mule Deer. With the exception of ecosection CP.FM1, all other landscapes have been rated as being either moderate or low fall/winter habitat for mule deer. While ecosection CP.FM1 provides a favorable combination of food, cover and juxtaposition, other ecosections usually provide only food or cover. All ratings were originally down-ranked (moderate to moderately low) to account for winter weather severity.

5.4 Classification of Fluvial Ecosections

Within the Keg River study area, five fluvial ecosections have been delineated and classified on the basis of valley form, channel morphology, slope and substrate materials.

5.4.1 Ecosection Descriptions

Fluvial Ecosection F1

Landform:

This ecosection includes the floodplain and terraces of the Chinchaga River. It is characterized by an extensively meandering channel (Plate 19) with a broad (2-3 km) continuous floodplain with numerous relic oxbows, many of which are infilling with organic materials. Stream gradient is 0.1% and and banks are generally less than 10 m in height. Substrate materials are composed mainly of sand and silt and, to a lesser extent, gravel. The major process of this fifth order stream is side-cutting.

Ecological Conditions:

The vegetation along the Chinchaga River has been strongly influenced by fire history and the periodic deposition of nutrient-rich alluvial materials. The dominant associations are balsam poplar/red osier dogwood and aspen/rose/horsetail, and, to a lesser extent, white spruce/feathermoss. Most of these stands with the exception of white spruce are relatively young, as a major fire occurred along the Chinchaga valley during 1950. These communities have developed on well to imperfectly drained Cumulic and Gleyed Cumulic Regosols. A small portion of this ecosection has been cleared for grazing and partially cultivated for hay and canola production.

Fluvial Ecosection F2

Landform:

This ecosection includes the floodplain and steep valley walls of the Meikle River. This extensively meandering fourth order channel has a narrow, discontinuous floodplain and a stream gradient of one per cent. Substrate materials are composed mainly of gravels and cobbles. Downcutting is the major process of the Meikle River. Low-lying alluvial terraces are found adjacent the stream course. The stream is deeply entrenched in a broad valley with walls varying from 60 to 110 m in height and are composed mainly of undifferentiated colluvial materials. Slumping is pronounced because of the presence of the easily erodible Upper Shaftsbury Formation. Small glaciofluvial terraces are common along the upper valley walls.

Ecological Conditions:

The vegetation within this valley is strongly influenced by surficial materials and aspect. Closed forests of the aspen/rose/horsetail and aspen-balsam poplar associations, and to a lesser extent, white spruce/feathermoss associations are found on low-lying river terraces and on the lower slopes of the valley. These stands have developed on sandy alluvial materials in which well drained Cumulic Regosols have developed. Closed aspen communities dominated by aspen/low-bush cranberry-rose are prevalent on valley walls and are underlain by well-drained Eutric Brunisols. Small grassland communities on Orthic Black Chernozems are occasionally found on the steepest south-facing exposures.

Landform:

The Alberta Research Council (1981) has delineated portions of this ecosection as having potential for aggregate resources.

Fluvial Ecosection F3

Landform:

This ecosection includes the Keg River, Goffit and Smeaton creeks, and the lower reaches of both the Kemp and Haro rivers. These stream courses are similar to the Chinchaga River (F1) in appearance, but differ significantly in substrate materials and size. Tightly meandering channels with narrow (50-500 m), continuous floodplains and relic oxbows are typical of these stream courses. They are generally fourth or fifth order streams and are characterized by gradients varying from 0.2 to 0.8% with banks generally less than 10 m in height. Substrate materials are predominantly silts and clays and, to a lesser extent, sand. Side-cutting is the major process of these streams.

Ecological Conditions:

The vegetation that occurs along these water courses is highly diverse, the dominant associations are aspen/rose/horsetail, aspen-balsam poplar, balsam poplar/red osier dogwood, white spruce/feathermoss and seepage willow. These communities have developed on well-drained sandy Cumulic Regosols and Orthic Eutric Brunisols. Portions of the floodplain adjacent to the Keg River have been cleared and cultivated.

Fluvial Ecosection F4

Landform:

This ecosection is composed of the upper reaches of the Kemp and Haro rivers. These deeply incised stream courses are characterized by discontinuous, weakly developed floodplains. They are first or second order streams and have gradients ranging from 2.5 to 5.0%. Substrate materials generally include sands and gravels and, to a lesser extent, cobbles. Shales of the easily erodible Upper Shaftesbury Formation are often exposed along the valley walls.

Ecological Conditions:

On discontinuous floodplains, diverse willow communities belonging to the Seepage willow association have developed on well drained Cumulic Regosols. Aspen communities of the aspen/low-bush cranberry-rose-red osier dogwood and aspen-balsam poplar associations occur on valley walls, the latter occurring mainly on moister sites. These aspen forests have developed on well drained Orthic Eutric and Dystric Brunisols. Orthic Regosols and non-soils are present on the steepest slopes.

Fluvial Ecosection F5

Landform:

This ecosection includes Gravina and Slims creeks. These second-order streams have developed in glacial meltwater channels with stream gradients in the order of one per cent. They do, however, become more deeply incised (2-5 per cent) near their mouths. Stream banks generally range between 10 and 25 m and substrate materials vary from sand to clay. These stream courses are partially infilled with organic accumulations of sedge and moss peats. Numerous small meltwater channels occur throughout the Clear Hills Upland, but were too small to delineate and map at the 1:100 000 scale.

Ecological Conditions:

Black spruce, willow and sedge for communities have developed within Gravina and Slim creeks. The vegetation on the valley walls is highly variable. The major associations include black spruce/Labrador tea/moss, depressional willow and sedge fens. These community types have developed on poorly to very poorly drained Mesisols, Fibrisols and peaty Gleysols.

5.4.2 Land Use Ratings

Table 19

LAND USE RATINGS FOR FLUVIAL ECOSECTIONS

	TILL CROPPING		FORESTRY			UNGULATES		
						MOOSE		MULE DEER
ECOSECTION	SOIL RATING SCHEDULE	STORIE INDEX	TOTAL MEAN ANNUAL INCREMENT	SITE INDEX	WHITE SPRUCE REGENERATION PROBABILITY	FALL/WINTER	SPRING/SUMMER	FALL/WINTER
F1	L(H)	5	$H^{9}M(H)^{1}$	$H^{9}M(H)^{1}$	L	M(H)	M(H)	M
F2	NC	2-3	$M^{8}H^{2}$	$M^{8}H^{2}$	$H^{8}L^{2}$	M(H)	M(H)	H
F3	NC	2	$M(H)-H^{6}H^{4}$	M(H)-H	$L^{6}H^{4}$	M(H)	M(H)	M(H)
F4	NC	1	$M^{5}M-H^{5}$	$M^{5}M-H^{5}$	$M^{5}M-H^{5}$	M(H)	M(H)	M
F5	NC	1	$M-H^{7}L^{3}$	$M-H^{7}L^{3}$	$L-H^{7}L^{3}$	M(H)	M(H)	M(H)

Till Cropping

All fluvial ecosections with the exception of F1 have been rated as non-arable. Limitations common to fluvial ecosections F2, F3, F4 and F5 include low soil fertility, coarse textured materials, periodic flooding and cold air drainage. Discontinuous, narrow floodplains and steep valley walls are also limitations of F2, F4 and F5 while poorly drained soils are a further constraint in F5. Fluvial ecosection F1 is rated as good to fairly good arable land and is limited by low soil fertility and coarse textured materials.

Forestry

Forest productivity, based on mean annual increment and site index, is rated as moderate to high for all fluvial ecosections. This may be attributed to a favorable combination of soil moisture and nutrients. The productivity of the wetland communities in F5 has been rated slightly lower.

The probability of white spruce regeneration is highly variable and appears to be strongly correlated with the occurrence of white spruce stands in or near fluvial valleys.

Ungulates

Moose. All fluvial ecosections have been rated as providing moderately high year-round habitat for moose. These areas provide a favorable combination of food and cover and also act as movement corridors.

Mule Deer. Fluvial ecosections F2, F3 and F5 have been rated as providing moderate high to high fall/winter habitat for mule deer. These areas provide a favorable combination of food and cover and are also characterized by good escape terrain. Food appears to be the major limitation of fluvial ecosections F1 and F4; therefore, they have been rated as providing moderate fall/winter habitat. All fluvial ecosections with the exception of F2 have been down-ranked (high to moderately high) to account for winter weather severity.

APPENDIX 1

TILL CROPPING RATING SCHEDULE DEVELOPED FOR THE KEG RIVER STUDY AREA BY PUBLIC LANDS DIVISION AND ALBERTA AGRICULTURE

Till cropping is assumed to mean the ordinary, annual operations that are performed to produce a cereal or oilseed crop. For purposes of this exercise, it does not include the production of perennial forages. The rating was set up to give an estimate of the agriculture potential relative to the adjoining, general area in question which includes the Hotchkiss-Hawk Hills communities in the south and the Keg River community in the north. The rating schedule has attempted to consider that in various parts of the province unique, local cultural practices develop over time and prevail over others so that the farms in a particular area can become economically viable and remain so. In other words, in the case of the area in question, the rating schedule has not overly prejudiced the overall rating because of "limitations" that are commonly accepted and easily overcome by local-oriented management. The following summarizes some of the more common characteristics of the soil and the area in general that local farmers have come to expect as "normal" and therefore of no major consequence to their operations.

ITEM	LOCAL CONSIDERATION
1. Solodic to Solonetzic B horizons in soil profile. "Hardpan" in various stages of degradation. Very unusual for surface "hardpan" to occur in the area. Almost always at least 6"-8" of topsoil over B horizon. Problem manifests itself in poorer internal drainage, some rooting restricted.	1. Tillage operations geared to overcoming: a) depth control b) timing c) equipment type Surface drainage projects undertaken to move excess water.

ITEM	LOCAL CONSIDERATION
2. Heavier-textured soils are very common. Tillage costs are higher than in other lighter-textured soil areas. Crusting can occur after rainfall.	2. Higher costs are inevitable and require good financial management Timely tillage can overcome crusting. Heavier textures are perhaps a blessing on drier years. There is concern with maintaining organic matter.
3. Low natural fertility of Gray Luvisols.	3. Fertilization is common practice. There is concern maintaining organic matter. Rotations with legumes are becoming more evident.
4. Less than desirable surface run-off.	4. Smaller, efficient drainage initiatives are very common.
5. Shorter growing season.	5. Choose appropriate types and varieties of crops. In any given year, longer season cereals such as wheat or Argentine varieties of rape can grow very successfully. Farmers will plan seeding in accordance with season

Table 20

INTERPRETATION OF THE TILL CROPPING RATING SCHEDULE

RATING NO.	COMMENTS	APPROPRIATE RATING EQUIVALENTS		
		BASIC INDEX	STORIE INDEX	EVALUATION CLASS
1. (Excellent)	Capability for production of cereal, oilseed crops is excellent. There are no limitations unusual to the area. Normally accepted cultural practices will be employed during annual cropping to ensure consistent success.	40+	6	M
2. (Good)	Capability for production of cereal, oilseed crops is good. There are no limitations unusual to the area but the relative degree of severity requires some extra attention by the operator during normally acceptable cultural practices to ensure consistent success. (For example, tillage depth and timing may be more critical.)	30 to 69	5	L(h)
3. (Fair)	Capability for production of cereal, oilseed crops is fair. There are limitations present that are not normal to the area (such as stones, surface "hardpan") or the relative degree of severity of a combination of limitations is such that cultural practices not normally associated with the area are necessary to ensure success. (Examples might be very heavy fertilization, liming, major drainage projects.)	25 to 35	4-5	L(h)
4. (Poor/Marginal)	Capability for production of cereal, oilseed crops is poor. Limitations to the soil or the area in general are such that economic cultural practices (such as may be employed on class no. 3 lands previously discussed) will not ensure consistent success of annual cereal, oilseed crop production. Such limitations may be cold air drainage from hills (climate), excess moisture (seepage from hills), excess slopes (erosion problems). The area has excellent potential for forage production or greenfeed production. Mixed farms or ranches would be well suited to these areas.	20 to 25	4	L(M) to L(L)
N/C	There is no capability for production of annual cereal, oilseed crops.	19	3	N/C

[1] Soil Rating Schedule, 1979 (see Tables 9, 10 and 11).

LIST OF REFERENCES

Achuff, P.L. and G.H. LaRoi. 1977. Picea-Abies forests in the highlands of northern Alberta. Vegetatio 33 (2/3): 127-146.

Alberta Energy and Natural Resources. Natural Resource Information Services. 1985. Integrated Resource Inventory Manual. Edmonton. In preparation.

Alberta Energy and Natural Resources. 1977. Physical Resource Data Base Methodology. Land Classification Group. Edmonton.

Alberta Energy and Natural Resources, Fish and Wildlife Division. 1983. Key wildlife areas - grizzly bear. 1:250 000 map. Edmonton.

Alberta Environment. Alberta Land Inventory. Land capability for forestry. Chinchaga River 84E. Alberta Environment, Edmonton.

Alberta Geological Survey. 1981. Aggregate resources, Bison Lake 84F 1:250 000. Alberta Research Council, Natural Resources Division, Edmonton.

Alberta Agriculture, Soils Branch, Alberta Soils Advisory Committee. 1983. System of rating arable land in Alberta. Edmonton.

Alberta Government and the University of Alberta. 1969. Atlas of Alberta. Edmonton.

Archibald, J.H. 1985. Biogeoclimatic classification of Northwestern Alberta. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division. Edmonton. In preparation.

Archibald, J.H., N.B. Ferguson, R.W. Haag, W.K. Hay and D.J. O'Leary. 1984. An Integrated Resource Inventory of the Deep Basin Area (83L). Volume II: Vegetation Classification. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division. Edmonton. Report No. T/78.

Baier, W. and Robertson. 1965. Estimation of latent evaporation from simple weather observations. Can. J. Plant Sci. 45: 276-284.

Bishoff, K. 1982. Forage inventory of the Frost Hills Study Area. Revised by D. Downing 1984. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. Report No. T/19 - No. 6.

__________. 1981. Forage inventory of the Jean D'Or Prairie Study Area - Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. ENR Report No. T/19 - No. 1.

Bothe, R.A. and R. Ames. 1984. Evapotranspiration in Alberta 1912 to 1982. Canada Dept. of Environment, Technical Services Division, Edmonton.

Brown, R.J.E. 1967. Permafrost in Canada. Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa. Publication No. NRC 9769, Map 1246A.

Canada. Agriculture Research Branch. 1982. Climate and soil requirements for economically important crops in Canada. Ottawa.

Canada Land Inventory. 1982. Soil capability for agriculture. Chinchaga River - 84E. Canada Dept. of Environment, Ottawa.

__________. 1971. Soil capability for agriculture. Bison Lake - 84F. Canada, Dept. of Regional Economic Expansion, Ottawa.

__________. 1973. Land capability for forestry. Bison Lake - 84F. Canada, Dept. of Environment, Lands Directorate, Ottawa.

__________. 1971. Land capability for recreation. Chinchaga River - 84E. Canada, Dept. of Regional Economic Expansion, Ottawa.

__________. 1970. Land capability for recreation. Bison Lake - 84F. Canada, Dept. of Regional Economic Expansion, Ottawa.

__________. 1970. Land capability for wildlife-waterfowl. Chinchaga River - 84E. Canada, Dept. of Regional Economic Expansion, Ottawa.

__________. 1973. Land capability for wildlife-waterfowl. Bison Lake - 84E. Canada, Dept. of Economic Expansion, Ottawa.

__________. 1971. Land capability for wildlife-ungulates. Bison Lake - 84F. Canada, Dept. of Regional Economic Expansion, Ottawa.

Canada Soil Survey Committee, Subcommittee on Soil Classification. 1978. The Canadian System of Soil Classification. Canada Dept. of Agriculture, Ottawa. Publication 1646.

Chanasyk, D.S., C.P. Woytowich, P.H. Crown, J.P. Verschuren, and E. Rapp. 1983. Factors causing delays in farming operations in the Peace River Region of Alberta. Can. Agric. Eng. 25: 5-9.

Chessman, G.E. 1982. The agroclimate of the Peace River Valley and a Comparison with Other Locations in British Columbia. Victoria, British Columbia, Ministry of the Environment, Air Studies Branch.

Daubenmire, R. 1968. Plant Communities: A textbook oif plant synecology. Harper and Row, New York.

Dawson, C.A. and R.W. Murchie. 1934. The settlement of the Peace River Country. A study of a pioneer area, Vol. VI. MacMillan of Canada, Toronto.

Dobbs, R.C. 1972. Regeneration of white and Engelmann spruce: A literature review with special reference to the British Columbia interior. Canada, Dept. of Environment, Canadian Forestry Service, Pacific Research Centre, Information Report BC-X-69.

Dunlop, S. 1984. An Agroclimatology of Southern Manitoba. Master's Thesis. University of Manitoba, Winnipeg.

Dupuis, Serge. 1985. Climatic inventory of the Lower Peace River Region. Alberta Energy and Natural Resources, Climate Inventory Program, Edmonton. Preliminary Draft.

__________. 1984a. A comparison of growing degree days vs potential evapotranspiration for use in agroclimatic capability. Edmonton. Alberta Energy and Natural Resources, Climate Inventory Program. Preliminary draft.

__________. 1984b. The use of climate data in land decisions in the Peace River District. Alberta Energy and Natural Resources, Climate Inventory Program, Edmonton. Preliminary draft.

__________. 1984c. Preliminary analysis of selected climatic data in the Fort Vermilion study area. Alberta Energy and Natural Resources, Climate Inventory Program, Edmonton. Preliminary draft.

Dutchak, K.L. 1979. Ecological Land Classification and Evaluation; Carcajou Study Area. Alberta Energy and Natural Resources, Resource Inventory and Appraisal, Edmonton. ENR Report No. 117.

Elliot, B. 1974. Northern agriculture, The Peace River area. Agrologist 3(6): 9-11.

Energy Resources Conservation Board. 1984. Oil and gas fields and main pipe lines in Alberta. Alberta Energy Resources Conservation Board, Edmonton. 84-60.

Giles, R.H. 1978. Wildlife management. W.H. Freeman and Co., San Francisco.

Glaser, P.H. 1983. Vegetation patterns in the North Black River peatland, northern Minnesota. Can. J. Botany 61: 2085-2104.

Gorham, E. 1957. The development of peatlands. Quart. Rev. Biol. 32: 145-166.

Gravenor, C.P. and L.A. Bayrock. 1961. Glacial deposits of Alberta. Research Council of Alberta, Edmonton. Contribution No. 51.

Gravenor, C.P. and W.A. Meneley. 1958. Glacial flutings in central and northern Alberta. American Journal of Science 256: 715-728.

Green, R. and R.B. Mellon. 1962. Geology of the Chinchaga River and Clear Hills (North Half) map areas, Alberta. Research Council of Alberta, Edmonton. Preliminary Report 62-8.

Groh, H. 1949. Plants of clearing and trail between Peace River and Fort Vermilion, Alberta. The Canadian Field Naturalist. 63 (4): 119-134.

Harris, R.E., A.G. Carder, W.L. Pringle, P.B. Hoyt, D.G. Faris and P. Pankiw. 1972. Farming potential of the Canadian Northwest. Canada Dept. Agriculture, Ottawa. Publication 1966.

Heinen, J. and G.H. Cross. 1983. An approach to measure interspersion, juxtaposition, and spatial diversity from cover-type maps. Wildlife Society Bulletin 11 (3): 232-237.

Hoyt, P.B. and A.M.F. Hennig. 1982. Soil acidification by fertilizers and longevity of lime applications in the Peace River region. Can. J. Soil Sci. 62: 155-163.

Hoyt, P.B., A.M.F. Hennig and J.L Dobb. 1967. Response of barley and alfalfa to liming of solonetzic, podzolic and gleysolic soils of the Peace River region. Can. J. Soil Sci. 47: 15-21.

I.D. Systems Ltd. 1984. Mighty Peace Tourism Destination Area Study. Travel Alberta. Edmonton.

IEC Beak Consultants Ltd. 1984. Species-habitat relationship model for moose. Alberta Energy and Natural Resources, Fish and Wildlife Division, Edmonton.

IEC Beak Consultants Ltd. 1984. Species-habitat relationship model for mule deer. Alberta Energy and Natural Resources, Fish and Wildlife Division, Edmonton.

Jenny, H. 1961. Derivations of state factor equations of soils and ecosystems. Soil Sci. Soc. Am. Proc. 25: 385-388.

Kocaoglu, S. and K. Jaques Bennett. 1983. An Integrated Resource Inventory of the Special Lakeland Area. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. Report No. T/48.

Krajina, V. 1969. Ecology of Western North America. Vol. 2, No. 1. University of British Columbia, Dept. Botany, Vancouver.

Lacate, D.S. 1969. Guidelines for Bio-physical Land Classification. Canada. Department of Fisheries and Forestry, Ottawa. Forest Service Publication 1264.

Lang, A.H. 1965. Bedrock Geology - Hay River, Map 1161A. Geological Survey of Canada, Ottawa.

La Roi, G.H. 1967. The Boreal Forest: Taiga. pp. 151-168. In Alberta, A Natural History, edited by W.G. Hardy. Hurtig Publishers, Edmonton, Alberta.

Law, J. 1955. Geology of northwestern Alberta and adjacent areas. Bulletin of the American Association of Petroleum Geologists 39 (1): 1927-1978.

Lee, P.G., R.A. Ellis and P.L. Achuff. 1982. Vegetation and flora of the Caribou Mountains, Alberta. Can. Field Naturalist. 96 (4): 389-408.

Lindsay, J.D. and W. Odynsky. 1965. Permafrost in organic soils of northern Alberta. Can. J. Soil Sci. 45: 265-269.

Lindsay, J.D., S. Pawluk and W. Odynsky. 1959. Exploratory soil survey of Alberta map sheets 84D (north half), 84E, 84F and 84G. Research Council of Alberta, Edmonton.

Major, J. 1951. A functional, factorial approach to plant ecology. Ecology 32: 392-412.

Manning, M.E. 1960. Report of the Royal Commission on the Great Slave Lake Railway. Vol. II.

Mathews, W.H. 1980. Retreat of the last ice sheet in northeastern British Columbia and Adjacent Alberta. Geological Survey of Canada, Ottawa. Bulletin 331.

Maxwell, J.W. 1964. Agricultural land utilization in the Dixonville-Fort Vermilion area of Alberta. Geographical Bulletin, 21:93-122.

McCully, A and H. Seaton. 1982. Paddle Prairie Metis Settlement land use planning inventory. Alberta Municipal Affairs, Planning Branch, Edmonton.

McLelland, M.B. 1984. Barley production in Alberta. Alberta Agriculture, Edmonton. Agdex 114/20-1.

Minnes, B. and B. Shephard. 1978. Keg River hamlet site study. Peace River Regional Planning Commission, Peace River.

Moller, Knut M. 1980. Spring browse survey in the Peace River region. Alberta Energy and Natural Resources, Fish and Wildlife Division, unpublished report, Peace River.

Moss, E.H. 1952. Grassland of the Peace River region, western Canada. Can. J. Botany 30: 98-124.

__________. 1953a. Forest communities in northwestern Alberta. Can. J. Botany 31: 212-252.

__________. 1953b. Marsh and bog vegetation in northwestern Alberta. Can. J. Botany 31: 448-470.

__________. 1983. Flora of Alberta. 2nd ed. Revised by John G. Packer. University of Toronto Press, Toronto.

Mueller-Dumbois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley & Sons, Toronto.

Odum, E.P. 1971. Fundamentals of Ecology. 3rd ed. W.B. Saunders & Co., Toronto.

Olson, R. 1984. A winter-climate severity index and climate data base for ungulates by wildlife habitat regions/subregions in Alberta. Alberta Energy and Natural Resources, Fish and Wildlife Division, Edmonton.

Ozoray, G. 1982. Hydrology of the Clear Hills-Chinchaga River area, Alberta. Alberta Research Council, Edmonton. Earth Sciences Report 82-4.

Pettapiece, W.W. 1981. The Physiographic Map of Alberta. Preliminary Draft Map and Legend. Scale 1:1 000 000. Canada, Dept. of Agriculture, Edmonton.

Philip, T. 1983. Pioneering Peace medicine. Alberta Report. December 26.

Proudfoot, V.D. 1974. The northern limit of agriculture in western Canada. In Climatic Resources and Economic Activity, edited by J.A. Taylor.

Reeder, S.W. and W. Odynsky. 1969. Reconnaissance soil survey of the Hotchkiss and Keg River area. Research Council of Alberta, Edmonton. Report No. 89.

Sanderson, M. 1984. Drought in the Canadian northwest. Geographical Review 38: 289-299.

Strong, W.L 1981. Ecological Land Classification and Evaluation: Jean D'Or Prairie. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. ENR Report No. T/11 - No. 5.

Strong, W.L and K.R. Leggat. 1981. Ecoregions of Alberta. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton.

Taylor, R.S. 1960. Some Pleistocene lakes of northern Alberta and adjacent areas. Journal of the Alberta Society of Petroleum Geologists 8(6): 167-185.

Tokarsky, O. 1972. Hydrology of the Bison Lake Area, Alberta. Research Council of Alberta, Edmonton.

Vitt and others (unpublished). Biological characteristics of bogs and fens. Class notes, October 26, 1983. Botany 421 (Peatlands). University of Alberta, Edmonton.

Water Survey of Canada. 1983. Historical streamflow summary, Alberta. Ottawa. Environment Canada. Inland Waters Directorate, Water Resources Branch.

Wilkinson, K and E.A. Johnson. 1983. Distribution of prairies and solonetzic soils in the Peace River district, Alberta. Can. J. Botany 61: 1851-1860.

Wyatt, F.A. and A. Leahey. 1929. Report of preliminary soil survey of the area from Grimshaw to Keg River between the sixth meridian and the Peace River. University of Alberta, Edmonton.

Volume

2

Integrated Resource Inventory

Alberta
ENERGY AND
NATURAL RESOURCES
Resource Evaluation
and Planning

Keg River Area Volume II

AN INTEGRATED RESOURCE INVENTORY
OF
THE KEG RIVER STUDY AREA

Volume II

Vegetation Classification

by:

Diana Brierley
David Downing
Dennis O'Leary

1985
Edmonton

Resource Information Services
Resource Evaluation and Planning
Alberta Energy and Natural Resources

ENR Technical Report Number: T/87 No. 2
International Standard Book Number: 0-86499-295-5 (Vol. 2)
0-86499-294-7 (Set)

FOR ADDITIONAL COPIES OF THIS REPORT, CONTACT:

Information Centre
Alberta Energy and Natural Resources
Main Floor, Bramalea Building
9920 - 108 Street
Edmonton, Alberta, Canada T5K 2M4

FOR ADDITIONAL COPIES OF MAPS, CONTACT:

Alberta Map and Air Photo Distribution Centre
2nd Floor, North Tower, Petroleum Plaza
9945 - 108 Street
Edmonton, Alberta, Canada T5K 2C9

Other titles in the set include:

T/87 - No. 1 - Physical Land Classification and Ecological Land Classification of the Keg River Study Area

TABLE OF CONTENTS

Page

Volume II

1. INTRODUCTION 1

2. STUDY METHODS 3

  2.1 Field Sampling 3
  2.2 Data Analysis 3
    2.2.1 Aggregation of Sample Plot Data 3
    2.2.2 Statistical Analyses 4

3. PLANT ASSOCIATION DESCRIPTIONS 7

  3.1 Deciduous Forest Associations 14
    3.1.1 Aspen/Buffalo-berry Association 14
    3.1.2 Aspen/Rose/Horsetail Association 17
    3.1.3 Aspen/Low-bush Cranberry-Rose Association . . . 20
    3.1.4 Aspen/Low-bush Cranberry-Rose-Red Osier Dogwood 27
    3.1.5 Aspen/Alder Association 29
    3.1.6 Aspen-Balsam Poplar/Red Osier Dogwood Association 34
    3.1.7 Balsam Poplar/Red Osier Dogwood Association . . 36
    3.1.8 Discussion: Deciduous Forest Associations . . . 39

  3.2 Coniferous Forest Association 43
    3.2.1 White Spruce-Aspen/Low-bush Cranberry-Rose Association 44
    3.2.2 White Spruce/Feathermoss Association 47
    3.2.3 Lodgepole Pine/Alder Association 50
    3.2.4 Lodgepole Pine-Black Spruce/Labrador Tea/ Feathermoss Association 53
    3.2.5 Lodgepole Pine-Aspen Association 57
    3.2.6 Discussion: Coniferous Forest Association . . . 61

  3.3 Wetland Association 63
    3.3.1 Black Spruce/Labrador Tea/Moss Association . . . 63
    3.3.2 Willow Shrubland Association - Depressional and Level Terrain 65
    3.3.3 Seepage Willow Association 69
    3.3.4 Sedge Fen Association 72
    3.3.5 Discussion: Wetland Association 76

  3.4 Grassland Association 77

4. PLANT SUCCESSION 81

Page

4.1 Background 81
4.2 Dryland Succession 82
4.3 Wetland Succession 83

5. PLANT ASSOCIATIONS AND SITE PRODUCTIVITY 87

5.1 Introduction 87
5.2 Data Used in Comparisons 87
5.3 Results of Analysis 89
5.4 Summary of Analyses 90
5.4.1 Deciduous Forest Associations 104

5.4.1.1 Aspen/Buffalo-berry Association . . . 104
5.4.1.2 Aspen/Rose/Horsetail Association . . . 104
5.4.1.3 Aspen/Low-bush Cranberry-Rose Association 105
5.4.1.4 Aspen/Low-bush Cranberry-Rose-Red Osier Dogwood Association 105
5.4.1.5 Aspen/Alder Association 106
5.4.1.6 Aspen-Balsam Poplar/Red Osier Dogwood Association 106
5.4.1.7 Balsam Poplar/Red Osier Dogwood Association 106

5.4.2 Coniferous Forest Associations 107

5.4.2.1 White Spruce-Aspen/Low-bush Cranberry-Rose Association 107
5.4.2.2 White Spruce/Feathermoss Association . 107
5.4.2.3 Lodgepole Pine/Alder Association . . . 108
5.4.2.4 Lodgepole Pine-Black Spruce/Labrador Tea/Feathermoss Association . . . 108
5.4.2.5 Lodgepole Pine-Aspen Association . . . 108

5.4.3 Wetland Associations 109

5.4.3.1 Black Spruce/Labrador Tea/Moss Association 109
5.4.3.2 Willow Shrubland Association - Depressional and Level Terrain . 109
5.4.3.3 Seepage Willow Association 110
5.4.3.4 Sedge Fen Association 110

5.4.4 Grassland Association 110

6. RELATIONSHIP TO OTHER CLASSIFICATIONS 111

REFERENCES 117

APPENDIX 1 119

LIST OF ILLUSTRATIONS

Figures

Figure		Page
3.1	Edatopic Grid - Aspen/Buffalo-berry Association	18
3.2	Edatopic Grid - Aspen/Rose/Horsetail Association . . .	21
3.3	Edatopic Grid - Aspen/Low-bush Cranberry Association .	25
3.4	Edatopic Grid - Aspen/Low-bush Cranberry-Rose-Red Osier Dogwood Association	30
3.5	Edatopic Grid - Aspen/Alder Association	33
3.6	Edatopic Grid - Aspen-Balsam Poplar/Red Osier Dogwood Association	37
3.7	Edatopic Grid - Balsam Poplar/Red Osier Dogwood Association	40
3.8	Edatopic Grid - White Spruce-Aspen/Low-bush Cranberry-Rose Association	48
3.9	Edatopic Grid - White Spruce/Feathermoss Association .	51
3.10	Edatopic Grid - Lodgepole Pine/Alder Association . . .	54
3.11	Edatopic Grid - Lodgepole Pine-Black Spruce/Feathermoss Association	58
3.12	Edatopic Grid - Lodgepole Pine-Aspen Association . . .	60
3.13	Edatopic Grid - Black Spruce/Labrador Tea/Moss Association	66
3.14	Edatopic Grid - Willow Shrubland Association - Depressional and Level Terrain	70
3.15	Edatopic Grid - Seepage Willow Association	73
3.16	Edatopic Grid - Sedge Fen Association	75
3.17	Edatopic Grid - Grassland Association	79
4.1	Dryland Succession	85
4.2	Wetland Succession	86

Figure Page

5.1 Site Index - Aspen 92

5.2 Total Stand M.A.I. 96

5.3 Grass and Graminoid Biomass 98

5.4 Forb Biomass 100

5.5 Palatable Browse Biomass 102

Plates

Plate Page

1 Aspen/buffalo-berry Association 18

2 Aspen/rose/horsetail Association 21

3 Aspen/low-bush cranberry-rose Association 25

4 Aspen/low-bush cranberry-rose-red osier dogwood Association 30

5 Aspen/alder Association 33

6 Aspen-balsam poplar/red osier dogwood Association . . . 37

7 Balsam poplar/red osier dogwood Association 40

8 White spruce-aspen/low-bush cranberry-rose Association . 48

9 White spruce/feathermoss Association 51

10 Lodgepole pine/alder Association 54

11 Lodgepole pine-black spruce/labrador tea/feathermoss Association 58

12 Lodgepole pine-aspen Association 60

13 Black spruce/Labrador tea/moss Association 66

14 Willow shrubland Association 70

15 Seepage willow Association 73

16 Sedge fen Association 75

17 Grassland Association 79

LIST OF TABLES

Table Page

3.1 Key to Plant Associations of the Keg River Study Area . 9

5.1 Phase 3 Site Index Classes 88

5.2 Data Summary: Site Index (Aspen) m @ 50 Yr. for Stands with Aspen Component, (n = 77) 93

5.3 Data Summary: Site Index (Lodgepole Pine) m @ 50 Yr. for Stands with Pine Component, n = 10 94

5.4 Data Summary: Site Index (Balsam Poplar) m @ 50 Yr. for Stands with Balsam Poplar Component, n = 15 . . 94

5.5 Data Summary: Site Index (White Spruce) m @ 50 Yr. for Stands with White Spruce Component, n = 32 . . 95

5.6 Data Summary: Site Index (Black Spruce) m @ 50 Yr. for Stands with Black Spruce Component, n = 4 . . . 95

5.7 Data Summary: Total MAI (m^3/ha/yr) of Sampled Stands with Mensuration Data (MAI = Mean Annual Increment = Total Volume ÷ Age) 97

5.8 Data Summary: Grass and Graminoid Biomass (kg/ha) of Sampled Sites Within 17 Associations, n = 105 . . . 99

5.9 Data Summary: Forb Biomass (kg/ha) of Sampled Stands Within 17 Associations, n = 105 101

5.10 Data Summary: Palatable Browse Biomass (kg/ha) for Sampled Stands Within 18 Associations, n = 51 (Current Annual Growth > 5 cm and Between 0.5-2.5 m) .103

6.1 Comparison of Deciduous Forest Vegetation Within the Boreal Mixedwood Ecoregion 112

6.2 Comparison of Coniferous Forest Vegetation Within Boreal Mixedwood Ecoregion 113

6.3 Comparison of Wetland Vegetation Within the Boreal Mixedwood Ecoregion 114

6.4 Comparison of Grassland Vegetation Within the Boreal Mixedwood Ecoregion 115

VOLUME II

VEGETATION CLASSIFICATION OF THE KEG RIVER STUDY AREA

1. INTRODUCTION

This volume supports the main Keg River Integrated Resource Inventory document (Volume I). In Volume I, plant associations are correlated to ecosections (landscape units). In Volume II, these plant associations are described in more detail with reference to both floristic and environmental characteristics.

There are five sections in Volume II. Topics covered include study methods, plant association descriptions, plant succession, productivity, and relationship to other studies. Study area location, land use and natural resource information (including vegetation), and overall study methodology are covered in Volume I. A more detailed discussion of previous vegetation work is included with the appropriate sections of Volume II. The appendices to Volume II include vegetation, mensuration, environment and soils data for individual sites examined during this study.

2. STUDY METHODS

2.1 Field Sampling

Before field sampling, background information from previous resource inventory studies was examined along with air photos to produce a preliminary landscape stratification. Study plots were subsequently chosen using the preliminary landscape units as sampling areas. Within these, plant communities were selected that appeared to be extensive and relatively homogeneous.

At each site, vegetation and environment data were collected. Mensuration, palatable browse, and biomass data were also collected at a number of sites so that site productivity could be determined. Data collection methods are fully detailed in the Integrated Resource Inventory Site Manual (Alberta Energy and Natural Resources, 1985).

2.2 Data Analysis

2.2.1 Aggregation of Sample Plot Data

Vegetation data were grouped by species composition according to the tabular method described by Mueller-Dombois and Ellenberg (1974). Plots having similar species composition and cover were grouped into plant associations, which were named according to the dominant species in one or more of the layers (e.g. the lodgepole pine/alder association has lodgepole pine as the dominant tree and green alder as the dominant shrub). Environment data were aggregated by plot according to the groups defined through vegetation classification. Refinement of the classification was an iterative process involving minor reorganization of plot data. The objective of this process was to define plant associations that were different from each other in terms of both species cover and composition, and environmental factors.

This stage of data analyses was conducted using vegetation, tree mensuration and environment programs run through the University of Alberta's mainframe computer facilities. A brief description of each program and information it generates is given in Appendix 1 of this volume.

2.2.2 Statistical Analyses

Statistical analyses were used to compare site productivity between the associations established through aggregation of sample plot information. Mean, standard deviation, and range about the mean at 70 and 95 per cent confidence levels were calculated for mensuration, forb and grass biomass, and palatable browse biomass data. These calculations were performed on data from each of the plot groupings used to define the associations. Various multiple range comparisons and analyses of variance were also carried out using the Government of Alberta's mainframe computer and the SAS (Statistical Analysis System) package (SAS Institute Inc. 1982).

It should be noted that at least one major assumption regarding statistical analysis is not met, namely that sampling be unbiased. In the strict sense, only randomly selected data samples should be used. From an operational viewpoint, however, access problems and the necessity of sampling all major variations in the study area within a relatively short period of time makes random sampling impractical.

The concept of plot selection used in the Keg River study is similar to that advocated by Mueller-Dombois and Ellenberg (1974) - "subjective without preconceived bias." That is, plots were not consciously located within communities which represented the investigators' opinion of what "should" be found in a given place. Nevertheless, some bias is unavoidable and, especially when taken together with small sample sizes, might still affect results to a significant degree. The statistical analyses reported in Section 5 of this volume should therefore be used only as indicators of general trends and should not be interpreted too strictly.

3. PLANT ASSOCIATION DESCRIPTIONS

This section describes 17 terrestrial plant associations occurring in the Keg River study area. Plot data from 140 sample plots were analysed and grouped to derive these associations according to methods described in the previous section. Association descriptions are presented below and include a summary of vegetation and environmental characteristics. The name assigned to each association indicates those species which are considered most representative of the association. Plants occurring in different layers are separated by a slash (/); species within the same layer are separated by a dash (-).

Environment characteristics included in the summaries are those judged to exert the largest effect on plant community development. The edatopic grids provided for each association graphically portray the range of soil moisture and nutrient conditions within which the association can be expected to occur.

The vegetation summary for each association includes a list of plant species and a summary of stand characteristics. The plant species listed are considered characteristic of the association being discussed and are usually constant, that is, occurring in more than 60 per cent of sampled plots. The letter "d" following some of the species names means that the indicated species occurs with greater abundance than other species, and always with more than five percent foliar cover. These species are referred to as dominant in the accompanying text by virtue of their abundance relative to other species[1]. Stand characteristics include the average height, age, stem diameter and stem density of trees in the main canopy. Detailed vegetation, environment and mensuration information used in preparing the summaries is provided in Appendix 1 of this volume. Scientific and common names of all vascular and non-vascular plants encountered during this study are recorded in Appendix 1, following the Summary Vegetation Tables.

An identification key (Table 3.1) accompanies this section of Volume II. This key is intended to assist the user in assigning communities delineated in the field to the most appropriate association, and can be used like any ordinary taxonomic key (e.g. Moss 1983).

---

[1] In the strict sense, dominance is attributed to organisms that have a significant effect on the community (Odum, 1971, p. 141). As the term is used differently here, this may or may not be true.

Table 3.1

KEY TO PLANT ASSOCIATIONS OF THE KEG RIVER STUDY AREA

Guidelines for Use

(1) Use this key for stands that have not been severely disturbed recently by fire, logging, cultivation, grazing, etc. and that have had sufficient time to stabilize after disturbance (20-30 years).

(2) Choose a spot that appears to be representative of the community (and landform) of interest to you.

(3) Verify that the area chosen is representative of the stand by examining the surrounding area. If not, select another plot.

(4) Using a 10 m x 10 m plot, identify and record the major plant species in each of the tree, shrub, forb, grass and moss layers (all of these might not be present at a particular site). Estimate the relative abundance of each species (in a 10 m x 10 m or 100 m^2 plot, coverage can be estimated in square metres and converted directly to per cent).

(5) Enter the key with the vegetation information collected in the plot along with appropriate environmental information (e.g. slope position, presence or absence of open water). Work through the key until you find the best match between field data and descriptions given in the key.

(6) Refer to the written descriptions within the text to verify the identification. Remember that the plant association is a composite picture of several field plots and is not likely to correspond exactly to the plant community you are examining.

- -

1a Wetlands: Water table close to or at soil surface, generally in wet, level to depressional areas or near base of slopes. Organic or Gleysolic soils with prominent mottling. Willow, black spruce, sedges predominate 2

1b Uplands: Water table gen. >30 cm from soil surface; soils generally not wet for most of growing season. Luvisolic, Gleysolic, Brunisolic, Solonetzic and Chernozemic soils. Grasslands, aspen, balsam poplar, white spruce, pine forests 5

2a Wetlands mainly on side slopes or near slope bases; willow communities on thin organic layers over mineral substrate receiving seepage inputs. Willow >10 m tall; understories with dogwood, larkspur, horsetail, reedgrass . . . . Seepage willow association (Section 3.3.3)

2b Wetlands on level areas or in depressions 3

3a Black spruce, labrador tea and feather or sphagnum mosses . . . . .Black spruce/labrador tea/moss association (Section 3.3.1)

3b Treeless fens 4

4a Sedge-dominated, open water common . . . . . . Sedge fen association (Section 3.3.4)

4b Willow-dominated . . . . Willow shrubland association-depressional and level terrain (Section 3.3.2)

5a Grass and dryland sedge-dominated, steep south facing slopes, Chernozemic soils . . . . Grassland association (Section 3.4)

5b Deciduous-dominated forests 6

5c Coniferous-dominated forests 10

6a Balsam poplar dominated with red osier dogwood and prickly rose in understory, generally on floodplains, terraces . . . . . Balsam poplar/red osier dogwood association (Section 3.1.7)

6b Aspen-dominated 7

7a Red osier dogwood present (generally >5% cover)

Balsam poplar codominant . . . . Aspen-balsam poplar/red osier dogwood association (Section 3.1.6)

Balsam poplar subordinate or absent.

Meadow horsetail common, generally on floodplains . . . . Aspen/rose/horsetail association (Section 3.1.2)

Generally on glaciolacustrine materials receiving seepage inputs, meadow horsetail sporadic . . . . Aspen/low-bush cranberry-rose-red-osier dogwood association (Section 3.1.4)

7b Red osier dogwood absent 8

8a Green alder generally abundant in understory; generally above 600 m asl in Naylor and Hawk Hills . . . . Aspen/alder association (Section 3.1.5)

8b Green alder generally absent, buffalo-berry present, occurs throughout study area. May include birch stands 9

9a Buffalo-berry dominant (>20% cover and greater than either low-bush cranberry or rose). Moraine and glaciolacustrine parent materials, Luvisols, Gleysols, Solonetzic soils . . . . Aspen/buffalo-berry association (Section 3.1.1)

9b Rose and/or lowbush cranberry dominant. Moraine and glaciolacustrine parent materials, mainly Luvisolic soils . . .Aspen-low-bush cranberry-rose association (Section 3.1.3)

Grass layer more or less well developed . . . . Hairy wild rye phase

Bunchberry constant, >3% cover . . . Bunchberry phase (maturing)

10a Stands with dominant or codominant white spruce 13

10b Stands with dominant or codominant lodgepole pine generally >600 masl 11

11a Pine and aspen codominant, moist sites above 500 masl on moraine . . . . Lodgepole pine-aspen association (Section 3.2.5)

11b Pine dominated, above 600 masl

12a Alder in understory, well drained sites on medium to coarse textured glaciofluvial deposits . . . . Lodgepole pine/alder association (Section 3.2.3)

12b Black spruce in tree layer and/or common in shrub layer, moderately well drained on medium to moderately fine textured glaciofluvial deposits . . . . . Lodgepole pine-black spruce/feathermoss association (Section 3.2.4)

13a Aspen and white spruce codominant, shrub layer moderately well developed with low-bush cranberry, rose . . . . White spruce-aspen/low-bush cranberry-rose association (Section 3.2.1)

13b White spruce dominated with impoverished understory (mainly feathermoss) . . . . . White spruce/feathermoss association (Section 3.2.2)

3.1 Deciduous Forest Associations

Deciduous forests cover in excess of 50 per cent of the study area and are thus of major ecological significance. Five aspen-dominated associations, one aspen-balsam poplar association and one balsam poplar association are described below. This division is based on analyses of vegetation and environment data from 77 sites.

3.1.1 Aspen/Buffalo-berry Association (*Populus tremuloides/Shepherdia canadensis*)

Site and Soil Characteristics

Number of sample sites : 23
Moisture regime : Mesic (submesic, subhygric)
Nutrient regime : Mesotrophic (submesotrophic)
Slope position : Plain
Mean slope : 3% (sample min., max. = 0, 9)
Aspect : Variable
Mean elevation (masl) : 508 (sample min., max. = 405, 648)
Parent material : Moraine, glaciolacustrine veneer over moraine, glaciolacustrine
Soil texture : Moderately fine to very fine[1]
Drainage : Moderately well to imperfect (poor)
Mean soil reaction (B horizon) : pH 4.9 (sample min., max. = 3.6, 6.0)
Soil classification : Luvic Gleysols, Orthic and Dark Gray Luvisols, Solonetzic Gray Luvisols, (Dark Gray Solod)

The Aspen/buffalo-berry association is found throughout the study area, but is mainly confined to the Peace River and Fort Vermilion lowlands. It occurs on moderately fine to fine textured glaciolacustrine or morainal deposits with level to gently undulating surface expression, and has developed on Gray Luvisols and Luvic Gleysols, and to a lesser extent Gray Solods.

---

[1] Texture classes are taken from the Canadian System of Soil Classification (Canada Soil Survey Committee 1976).

The occurrence of Solonetzic and Dark Gray Luvisols, and Dark Gray Solods is thought to be associated with parkland vegetation (interspersed areas of aspen forest and native grassland) (Moss 1952; CSSC 1978; Wilkinson and Johnson 1983).

Soil pH in the rooting zone is variable, although most sample sites had slightly to moderately acid soils (pH 5.0-6.0). Most sites within this association were judged to be mesic and mesotrophic (moderately well supplied with water and nutrients, respectively). However, small variations in topography can produce large changes in the soil moisture regime. As a result, stands belonging to this association also occur less frequently on submesic (dry) sites occupying upper slopes or slightly elevated terrain and subhygric (moist) sites in shallow depressions. Figure 3.1 shows the range of moisture and nutrient conditions within which communities belonging to the association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
Shrub Layer	**Shepherdia canadensis** (d)	Buffalo-berry
	Rosa acicularis/woodsii	Prickly rose/ Common wild rose
	Viburnum edule	Low-bush cranberry
	Salix sp.	Willows
	Populus tremuloides	Trembling aspen
Forb Layer	**Cornus canadensis**	Bunchberry
	Epilobium angustifolium	Fireweed
	Lathyrus ochroleucus	Peavine
	Linnaea borealis	Twinflower
	Rubus pubescens	Dewberry
	Achillea millefolium	Yarrow
	Galium boreale	Northern bedstraw

Grass & Graminoid Layer	**Elymus innovatus**	Hairy wild rye
Mosses & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 14.4 m (sample min., max. = 8, 25)
Mean stem diameter @ 1.3 m : 11.5 cm (sample min., max. = 7.7, 25.4)
Mean stand age : 47 yr. (sample min., max. = 24, 86)
Mean stem density (total live stems/ha) : 1 740 (sample min., max = 600, 3 600)

Young trembling aspen comprises the tree canopy of the aspen/buffalo-berry association; balsam poplar is occasionally codominant on moister sites and white spruce is occasionally present below the main canopy. Buffalo-berry (**Shepherdia canadensis**) is the dominant species in the shrub layer which has moderate to high cover. Other constant but less abundant shrub species include low-bush cranberry (**Viburnum edule**), prickly and common wild rose (**Rosa acicularis, R. woodsii**), willows (primarily **Salix bebbiana**) and trembling aspen. Heavier willow cover and the presence of currant (**Ribes spp.**) are indicative of subhygric sites. White spruce (**Picea glauca**) was present in about 50 per cent of sampled stands.

The forb layer is less well developed than the shrub layer. Bunchberry (**Cornus canadensis**) and fireweed (**Epilobium angustifolium**) are constant species and although they have greater average cover than other forbs, they are not clearly dominant. Higher bunchberry cover (>5%) is generally correlated with older stands. Moss and lichen cover is very low. Plate 1 shows the general understory appearance of a typical stand within this association.

3.1.2 Aspen/Rose/Horsetail Association
(**Populus tremuloides/Rosa spp./Equisetum pratense**)

Site and Soil Characteristics

Number of sample sites: 3
Moisture regime : Subhygric (mesic)
Nutrient regime : Mesotrophic (permesotrophic)
Slope position : Adjacent to streams, on terraces
Mean slope : 3% (sample min., max. = 1, 4)
Aspect : Northerly
Mean elevation (masl) : 430 (sample min., max. = 420, 440)
Parent material : Fluvial
Soil texture : Moderately coarse to medium
Drainage : Moderately well (rapid)
Mean soil reaction (rooting zone) : pH 7.1 (sample min., max. = 5.7, 8.0)
Soil classification : Cumulic Regosols

The aspen/rose/horsetail association occurs on fluvial terraces adjacent to major streams such as the Chinchaga and Meikle Rivers. Soils are Cumulic Regosols, indicating that sediment deposition by nearby streams has occurred in recent times. Relatively coarse textured materials are moderately well to rapidly drained. Although no seepage was observed in soil pits, it is probable that the nutrient status of sites supporting this association is improved both by periodic inputs of sediment and by subsurface water flow both from adjacent streams and from higher surrounding terrain. Figure 3.2 shows the range of moisture and nutrient conditions within which communities belonging to the association were observed to occur.

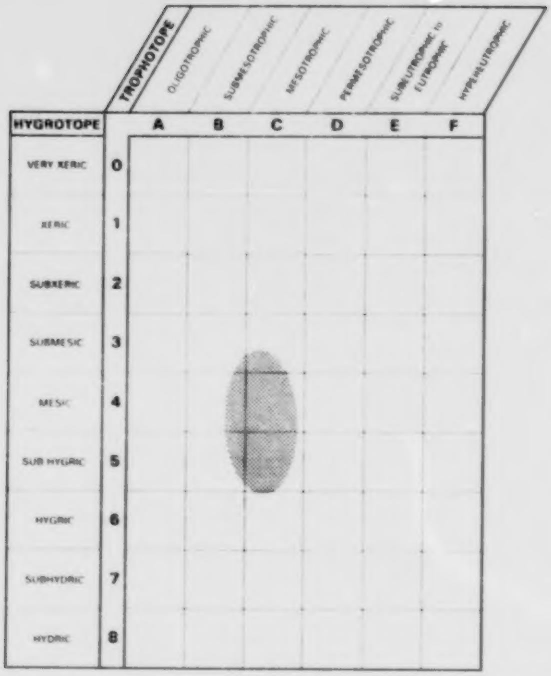

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC TO EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.1. Edatopic grid - aspen/buffalo-berry association

Plate 1. Well-stocked stands of young aspen with a continuous understory of buffalo-berry characterize the aspen/buffalo-berry association.

Vegetation

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
Shrub Layer	**Rubus idaeus** (d)	Wild red raspberry
	Rosa acicularis/woodsii (d)	Prickly rose/ Common wild rose
	Ribes oxyacanthoides	Wild gooseberry
	Viburnum edule	Low-bush cranberry
	Cornus stolonifera	Red-osier dogwood
	Symphoricarpos albus	Snowberry
	Lonicera dioica	Twining honeysuckle
Forb Layer	**Mertensia paniculata** (d)	Tall mertensia
	Equisetum pratense (d)	Meadow horsetail
	Delphinium glaucum	Tall larkspur
	Galium boreale	Northern bedstraw
	Thalictrum venulosum	Veiny meadow rue
	Lathyrus ochroleucus	Pea vine
	Vicia americana	Vetch
Grass & Graminoid Layer	**Calamagrostis canadensis**	Marsh reed grass
Mosses & Lichens on Humus	No constant species	
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 17 m (sample min., max. = 14, 22)
Mean stem diameter (@ 1.3 m) : 11.7 cm (sample min., max. = 10.6, 13.0)
Mean stand age : 43 (sample min., max. = 40, 47)
Mean stem density (total live stems/ha) : 2 970 (sample min., max. = 2 800, 3 100)

Young trembling aspen is the sole component of the tree layer in the aspen/rose/horsetail association. The mean stand density of this association is the highest of any association in the study area (2 970 live stems/ha).

Shrub cover ranges from low (15%) to very high (90%) and is by comparatison species-rich, with wild red raspberry (**Rubus idaeus**) and rose as dominant species. White spruce was not present in any of the sample plots. The forb layer has moderate (25-50%) cover and is similarly diverse, tall mertensia (**Mertensia paniculata**) and meadow horsetail (**Equisetum pratense**) being the dominant species. There are no species in the grass layer occurring with high enough cover to be considered dominant. However, marsh reed grass (**Calamagrostis canadensis**) is constant. The moss layer is very poorly developed.

The favorable moisture and nutrient status of this association is indicated by several of the characteristic species such as red osier dogwood (**Cornus stolonifera**), tall larkspur (**Delphinium glaucum**), and meadow horsetail (**Equisetum pratense**). Plate 2 shows the general understory appearance of a typical stand within this association.

3.1.3 Aspen/Low-bush Cranberry-Rose Association (**Populus tremuloides/Viburnum edule-Rosa spp.**)

This association occurs on sites exhibiting a somewhat similar range of site and soil conditions as the aspen/buffalo-berry association. However, low-bush cranberry and rose are the dominant shrub species.

Two phases of this association have been identified and differentiated on the basis of average stand age, stem density, average canopy height and understory species composition: the aspen/low-bush

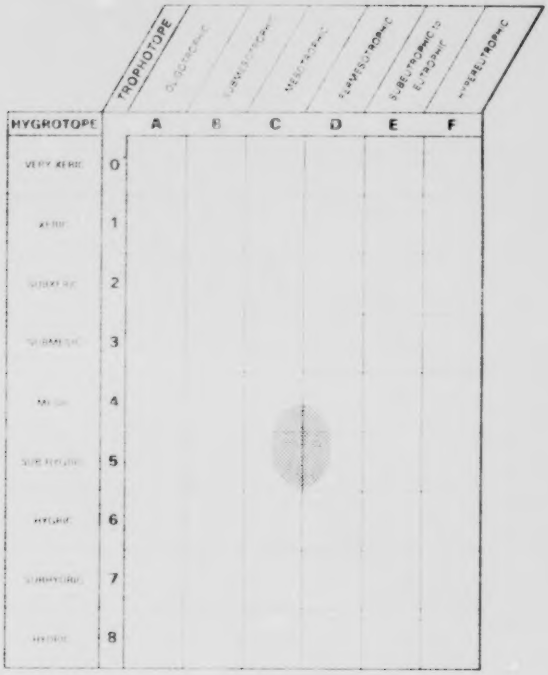

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC TO EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUBHYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.2. Edatopic grid - aspen/rose/horsetail association

Plate 2. Wild rose and meadow horsetail dominate the understory of the aspen/rose/horsetail association. Sites supporting this association are comparatively rich.

cranberry-rose/hairy wild rye phase and the aspen/low-bush cranberry-rose/bunchberry phase. The summary of site and soil characteristics given below applies to both phases of this association, however, each phase will be discussed separately with respect to vegetation and productivity.

Site and Soil Characteristics

Number of sample sites: 19
Moisture regime : Mesic (subhygric)
Nutrient regime : Mesotrophic (submesotrophic)
Slope position : Plain
Mean slope : 4% (sample min., max. = 0, 31)
Aspect : Variable
Mean elevation (masl) : 506 (sample min., max. = 405, 708)
Parent material : Moraine and glaciolacustrine (colluvium)
Soil texture : Moderately fine to fine
Drainage : Moderately well (imperfect)
Mean soil reaction (B horizon) : pH 5.5 (sample min., max. = 3.4, 8.0) for hairy wild rye phase; 4.3 (sample min., max. = 3.4, 5.4) for bunchberry phase
Soil classification : Solonetzic and Dark Gray Luvisols, Orthic Gray Luvisols (Gleyed Luvisols and Orthic Luvic Gleysols)

The aspen/low-bush cranberry-rose association occurs on level to gently sloping morainal and glaciolacustrine materials which are moderately fine to fine textured. Soils are predominantly Gray Luvisols which have developed on moderately well drained sites, with Gleyed Gray Luvisols and Gleysols on imperfectly to poorly drained sites respectively. Drainage appears to be somewhat better in this association than in the aspen/buffalo-berry association, as gleyed soils occur more frequently with the latter. Figure 3.3 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation: Aspen/low-bush cranberry-rose/hairy wild rye phase

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
Shrub Layer	**Rosa acicularis/woodsii** (d)	Prickly rose/ Common wild rose
	Viburnum edule (d)	Low-bush cranberry
	Shepherdia canadensis	Buffalo-berry
Forb Layer	**Cornus canadensis**	Bunchberry
	Epilobium angustifolium	Fireweed
	Galium boreale	Northern bedstraw
	Vicia americana	Vetch
	Lathyrus ochroleucus	Peavine
	Linnaea borealis	Twinflower
	Fragaria virginiana	Wild strawberry
	Rubus pubescens	Dewberry
	Aster ciliolatus	Lindley's aster
	Mertensia paniculata	Tall mertensia
Grass & Graminoid Layer	**Elymus innovatus** (d)	Hairy wild rye
Mosses & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 15 m (sample min., max. = 8, 26)
Mean stem diameter @ 1.3 m : 10.6 cm (sample min., max. = 8.0, 20.8)
Mean stand age : 46 yr. (sample min., max. = 29, 96)
Mean stem density (total live stems/ha) : 2 440 (sample min., max. = 767, 3 200)

Stands belonging to the aspen/low-bush cranberry-rose/hairy wild rye phase are characterized by a dense, young, aspen-dominated tree stratum. White spruce occurs with low cover underneath the main canopy and in the tall shrub layer and was present in 60 per cent of the sampled plots. Rose and low-bush cranberry are the dominant shrubs in a discontinuous shrub layer (cover range 5-45%). Buffalo-berry is a constant species but is usually present with lower cover than rose and/or low-bush cranberry. The forb layer is reasonably diverse but, although there are a number of constant species, none occur consistently with high enough cover to be classed as dominant. Hairy wild rye dominates the grass layer. Moss and lichen cover is sparse. Plate 3 shows the general understory appearance of a typical stand within this association.

This phase of the aspen/low-bush cranberry-rose association is sometimes difficult to distinguish in the field from the aspen/buffalo-berry association, particularly when either low-bush cranberry or rose occur with the same cover as buffalo-berry. Assignment of individual plots to the appropriate association was sometimes quite arbitrary; in problematic situations, if the cover of buffalo-berry equalled or exceeded 20 per cent, the plot was assigned to the aspen/buffalo-berry association.

Vegetation: Aspen/low-bush cranberry-rose/bunchberry phase

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
Shrub Layer	**Viburnum edule** (d)	Low-bush cranberry
	Rosa acicularis (d)	Prickly rose
	Picea glauca	White spruce
	Shepherdia canadensis	Buffalo-berry
	Salix spp.	Willow
	Populus tremuloides	Trembling aspen
Forb Layer	**Epilobium angustifolium** (d)	Fireweed
	Cornus canadensis (d)	Bunchberry
	Lathyrus ochroleucus	Peavine
	Rubus pubescens	Dewberry
	Linnaea borealis	Twinflower

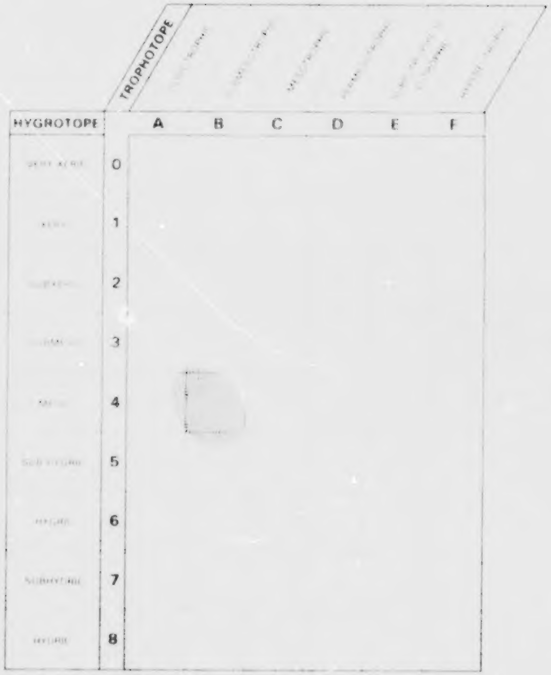

TROPHOTOPE
HYGROTOPE
A
B
C
D
E
F
0
VERY XERIC
1
XERIC
2
SUBXERIC
3
SUBMESIC
4
MESIC
5
SUBHYGRIC
6
HYGRIC
7
SUBHYDRIC
8
HYDRIC

Fig. 3.3. Edatopic grid - aspen/low-bush cranberry rose assocation.

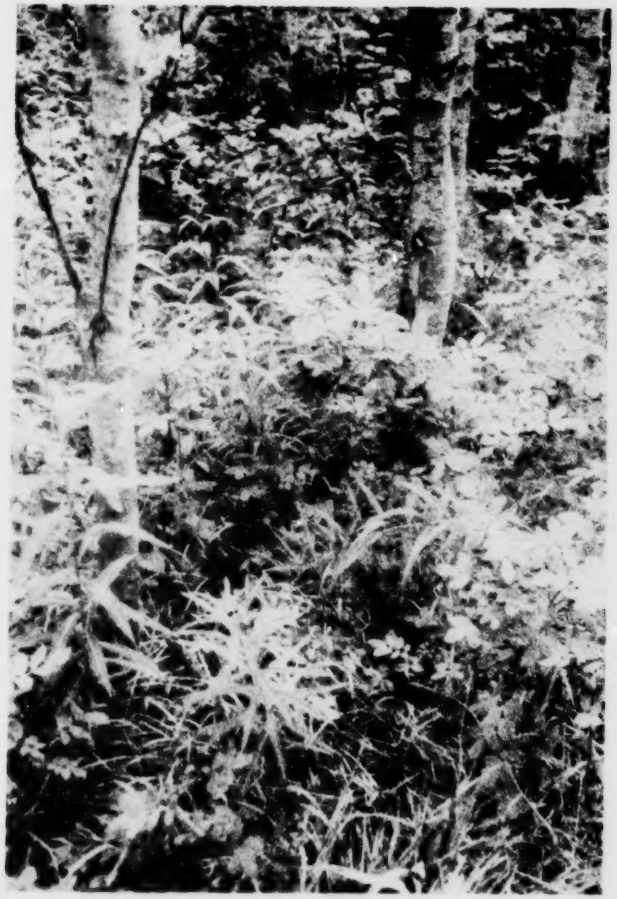


Plate 3. Varying proportions of low-bush cranberry and rose characterize the aspen/low-bush cranberry-rose association. Hairy wild rye, which is present in the foreground, is often associated with younger stands.

	Galium boreale	Northern bedstraw
	Pyrola asarifolia	Common pink wintergreen
	Aster conspicuus	Showy aster
	Mertensia paniculata	Tall mertensia
	Vicia americana	Vetch
	Fragaria virginiana	Wild strawberry
	Petasites palmatus	Palmate-leaved coltsfoot
	Maianthemum canadense	Two-leaved Solomon's-seal
Grass & Graminoid Layer	No constant species	
Mosses & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 21 m (sample min., max. = 14, 29)
Mean stem diameter @ 1.3 m : 18.2 cm (sample min., max. = 9.7, 35.0)
Mean stand age : 75 yr. (sample min., max. = 40, 121)
Mean stem density (total live stems/ha) : 1 310 (sample min., max. = 325, 2 800)

Stands belonging to the aspen/low-bush cranberry-rose/bunchberry phase are on average 30 years older, much less densely stocked, and significantly taller than those of the aspen/low-bush cranberry-rose/hairy wild rye phase. Trembling aspen is still the dominant component of the tree canopy and has thinned considerably with age. The shrub layer is somewhat better developed in this phase. Low-bush cranberry and rose share dominance. Buffalo-berry, although constant, is present with much lower cover in this phase than in the younger hairy wild rye phase, and white spruce is a constant species occurring with low cover in the shrub layer (present at 60 per cent of sampled sites).

3.1.4 Aspen/Low-bush Cranberry-Rose-Red Osier Dogwood (**Populus tremuloides/Viburnum edule-Rosa spp.-Cornus stolonifera**)

Site and Soil Characteristics

Number of sample sites: 9
Moisture regime : Mesic-subhygric
Nutrient regime : Meso-permesotrophic
Slope position : Lower slopes, plains
Mean slope : 2% (sample min., max. = 0, 5)
Aspect : Variable
Mean elevation (masl) : 454 (sample min., max. = 405, 550)
Parent material : Glaciolacustrine (fluvial)
Soil texture : Moderately fine to fine
Drainage : Imperfect to poor
Mean soil reaction (rooting zone) : 5.3 (sample min., max. = 4.4, 7.0)
Soil classification : Luvic Gleysols, Gleysols (Gray Luvisols)

This association occurs primarily on moderately fine to fine textured, level to gently undulating glaciolacustrine deposits, and to a lesser extent on fluvial deposits derived from slope wash. Luvic and Orthic Gleysols have developed on imperfectly to poorly drained sites; mottling may occur at depths of 0 to 50 cm, but is not restricted to surface horizons as is the case for soils within the aspen/buffalo-berry association. This suggests that soils are somewhat better supplied with subsurface water than the aspen/buffalo-berry association. Neutral to slightly alkaline pH values provide some indication that nutrients, particularly exchangeable bases, are readily available. No seepage was noted at any of the sites comprising this association. Figure 3.4 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
	Populus balsamifera	Balsam poplar
Shrub Layer	**Rosa acicularis** (d)	Prickly rose
	Cornus stolonifera (d)	Red-osier dogwood
	Viburnum edule (d)	Low-bush cranberry
	Populus tremuloides	Trembling aspen
	Salix spp.	Willow
	Ribes oxyacanthoides	Wild gooseberry
Forb Layer	**Equisetum arvense**	Common field horsetail
	Mertensia paniculata	Tall mertensia
	Rubus pubescens	Dewberry
	Fragaria virginiana	Wild strawberry
	Lathyrus ochroleucus	Peavine
	Epilobium angustifolium	Fireweed
	Vicia americana	Vetch
	Galium boreale	Northern bedstraw
	Aster ciliolatus	Lindley's aster
	Pyrola asarifolia	Common pink wintergreen
	Achillea millefolium	Yarrow
	Viola renifolia	Kidney-leaved violet
Grass & Graminoid Layer	No constant species	
Moss & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
	Plagiomnium cuspidatum	
Moses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 26.0 m (sample min., max. = 21, 30)
Mean stem diameter @ 1.3 m : 22.8 cm (sample min., max. = 14.4, 27.6)
Mean stand age : 73 yr. (sample min., max. = 57, 84)
Mean stem density (total live stems/ha) : 870 (sample min., max. = 350, 1 550)

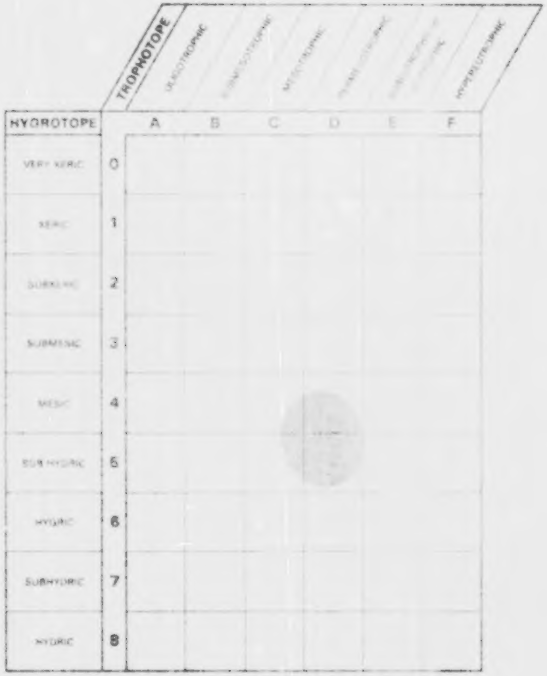
This association is characterized by tall, lightly stocked, mature aspen stands with a well-developed canopy. Balsam poplar is often present with low cover as a constituent of the main canopy or beneath it. The shrub layer is continuous and diverse. Low-bush cranberry, rose, and red osier dogwood are the dominant shrub species; white spruce is infrequent, and was present in the shrub layer at 35 per cent of sampled sites. The forb layer is comparatively species-rich, although not as well developed as the shrub layer. There are no forbs which have consistently high cover, but tall mertensia and common horsetail may be locally abundant. Grasses are present with low cover, and the moss and lichen layer is poorly developed.

Wild gooseberry (**Ribes oxyancanthoides**), kidney-leaved violet (**Viola renifolia**) and red osier dogwood are indicative of moist site conditions, the latter also being typically associated with rich soils. Plate 4 shows understory vegetation in a stand typical of this association.

3.1.5 Aspen/Alder Association
(**Populus tremuloides/Alnus crispa**)

Site and Soil Characteristics

Number of sample sites:	11
Moisture regime :	Mesic (submesic, subhygric)
Nutrient regime :	Mesotrophic (submesotrophic, permesotrophic)
Slope position :	Variable
Mean slope :	4% (sample min., max. = 0, 10)
Aspect :	Variable
Mean elevation (masl) :	677 (sample min., max. = 468, 760)
Parent material :	Glaciofluvial and morainal, often over residual material
Soil texture :	Coarse to moderately fine
Drainage :	Moderately well to well



TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUBHYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.4. Edatopic grid - aspen/low-bush cranberry-rose-red osier dogwood association

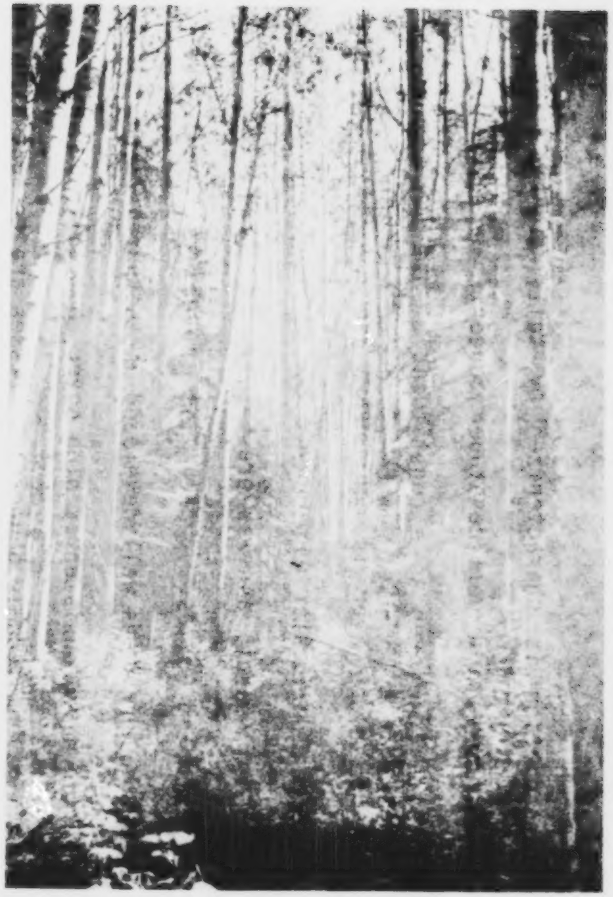


Plate 4. Well stocked aspen stands with a variable understory of low-bush cranberry, rose and red osier dogwood are typical of this association. Forest productivity within the aspen/low bush cranberry-rose-red osier dogwood association is comparatively high.

Mean soil reaction
(B horizon) : pH 5.7 (sample min., max. = 3.1, 8.0)
Soil classification : Eluviated Eutric Brunisols, Orthic and Brunisolic Gray Luvisols

The aspen/alder association occurs on level to gently undulating and ridged topography, largely within the Clear Hills Upland Physiographic Subregion, at an average elevation of about 680 masl. Eluviated Eutric Brunisols and Gray Luvisols have developed on moderately well to well drained glaciofluvial and morainal materials which frequently occur over a residual substratum. Soil pH in the rooting zone (the B horizon) is variable but many sampled sites had slightly to moderately acid soils. Most sites were judged to be mesic and mesotrophic; coarse textured soils contributed to somewhat drier conditions at a few sites. Figure 3.5 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
Shrub Layer	**Alnus crispa** (d)	Green alder
	Viburnum edule (d)	Low-bush cranberry
	Rosa acicularis/woodsii	Prickly rose/ common wild rose
Forb Layer	**Rubus pubescens** (d)	Dewberry
	Pyrola asarifolia	Common pink wintergreen
	Linnaea borealis	Twinflower
	Cornus canadensis	Bunchberry
	Mertensia paniculata	Tall mertensia
	Epilobium angustifolium	Fireweed
	Petasites palmatus	Palmate-leaved coltsfoot
	Orthilia secunda	One-sided wintergreen

Grass & Graminoid Layer	**Elymus innovatus** (on glaciofluvial parent materials)	Hairy wild rye
	Calamagrostis spp.	Reed grass
Mosses & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 20.5 m (sample min., max. = 14, 28)
Mean stem diameter @ 1.3 m : 18.7 cm (sample min., max. = 10.7, 26.5)
Mean stand age : 71 yr. (sample min., max. = 37, 123)
Mean stem density (total live stems/ha) : 1 750 (sample min., max. = 225, 2 900)

Mature, generally well stocked stands of trembling aspen comprise the tree canopy of the aspen/alder association. Green alder (**Alnus crispa**) and low-bush cranberry dominate a well-developed shrub layer. White spruce is not a constant species of either the tree or shrub layers, occurring in only 40% of sampled sites with low cover. Dewberry is generally the most abundant plant of a relatively diverse forb stratum. Overall, the grass layer is poorly developed. Hairy wild rye is a constant species on glaciofluvial parent materials, sometimes occurring with very high cover on sites with well drained coarse textured soils. Reed grasses (**Calamagrostis canadensis, C. stricta**) are constant species on finer textured morainal materials but occur with low cover. Moss and lichen cover is very low. Plate 5 shows understory vegetation in a typical stand within this association.

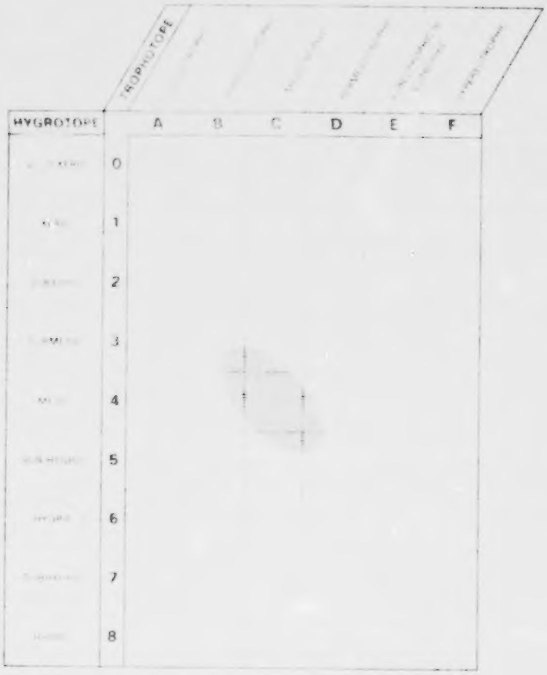

TROPHOTOPE
HYGROTOPE
A
B
C
D
E
F
0
1
2
3
4
5
6
7
8

Fig. 3.5. Edatopic grid - aspen/alder association

Plate 5. Well-stocked aspen stands with a well developed understory of green alder and low-bush cranberry characterize the aspen/alder association. Most stands of this association occur at higher elevations within the study area.

3.1.6 Aspen-Balsam Poplar/Red-Osier Dogwood Association (**Populus tremuloides-Populus balsamifera/Cornus stolonifera**)

Site and Soil Characteristics

Number of sample sites: 6
Moisture regime : Subhygric (mesic)
Nutrient regime : Permesotrophic (mesotrophic)
Slope position : Variable
Mean slope : 3.5% (range 0-8%)
Aspect : Northerly
Mean elevation (masl) : 481 (sample min., max. = 404, 528)
Parent material : Glaciolacustrine (colluvial, fluvial)
Soil texture : Medium to moderately fine
Drainage : Moderately well to imperfect
Mean soil reaction (B horizon) : pH 6.9 (range 6.5-7.5)
Soil classification : Gray Luvisols, Gleysols (Regosols)

The aspen-balsam poplar/red-osier dogwood association occurs primarily on moist, nutrient-rich sites on slopes, on gently inclined plains and along streams. Colluvium and fluvial deposits constitute the subsoil on more prominent slopes and near streams, while glaciolacustrine materials occur on more gently sloping areas. Gray Luvisols and Gleysols have developed on moderately well drained and imperfectly drained materials, respectively. No seepage was observed in soil pits during sampling, but neutral to alkaline soil pH suggest that nutrients, particularly exchangeable bases, are readily available. Figure 3.6 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Populus tremuloides** (d)	Trembling aspen
	P. balsamifera (d)	Balsam poplar

Shrub Layer	**Rosa acicularis** ()d)	Prickly rose
	Viburnum edule	Low-bush cranberry
	Cornus stolonifera	Red osier dogwood
	Populus tremuloides	Trembling aspen
	P. balsamifera	Balsam poplar
	Salix spp.	Willows
Forb Layer	**Mertensia paniculata** (d)	Tall mertensia
	Pyrola asarifolia	Common pink wintergreen
	Petasites palmatus	Palmate-leaved coltsfoot
	Lathyrus ochroleucus	Peavine
	Vicia americana	Vetch
	Equisetum arvense	Common field horsetail
	Rubus pubescens	Dewberry
	Fragaria virginiana	Wild strawberry
	Aster ciliolatus	Lindley's aster
	Mitella nuda	Bishop's cap
	Epilobium angustifolium	Fireweed
Grass Layer	No constant species	
Mosses & Lichens on Humus	No constant species	
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 20.3 m (sample min., max. = 18, 24)
Mean stem diameter @ 1.3 m : 17.5 cm (sample min., max. = 6.2, 26.5)
Mean stand age : 59 yr. (sample min., max. = 43, 70)
Mean stem density (total live stems/ha) : 1 640 (sample min., max. = 735, 3 400)

Tall, well stocked stands of trembling aspen and balsam poplar characterize the tree stratum of the aspen-balsam poplar/red-osier dogwood association. In the shrub layer, prickly rose is dominant, with low-bush cranberry and red osier dogwood as important associates. White spruce is occasional, occurring at only 20 per cent of sampled sites. The forb layer is diverse and fairly well developed. Tall mertensia is generally present with greater cover than other forb species. There are no constant species in the grass layer, and grass cover is very low. The moss and lichen layers are also poorly developed. Plate 6 shows understory vegetation in a typical community within this association.

3.1.7 Balsam Poplar/Red-Osier Dogwood Association (**Populus balsamifera/Cornus stolonifera**)

Site and Soil Characteristics

Number of sample sites	6
Moisture regime	Mesic-hygric
Nutrient regime	Meso-permesotrophic
Slope position	Along streams, near slope bases
Mean slope	2.5% (sample min., max. = 0, 6)
Aspect	Variable
Mean elevation (masl)	459 (sample min., max. = 427, 500)
Parent material	Fluvial
Soil texture	Coarse to moderately fine
Drainage	Well to moderately well (imperfect)
Mean soil reaction (rooting zone)	pH 6.7 (sample min., max = 5.2, 8.0)
Soil classification	Cumulic and Orthic Regosols

Stands belonging to the balsam poplar/red-osier dogwood association are strongly correlated with parent materials of fluvial origin, but may also occur on glaciolacustrine veneers overlying glaciofluvial deposits. Regosols are prevalent; disturbance by flooding from adjacent streams is probably an important influence at some sites. No seepage was observed in soil pits during sampling, but moderately alkaline soil pHs are probably indicative of readily available soil nutrients, particularly exchangeable bases. Figure 3.7 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

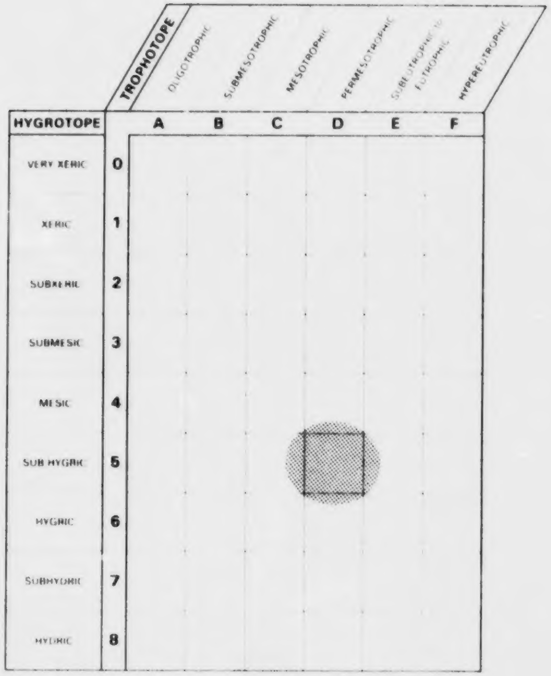

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC TO EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.6. Edatopic grid - aspen/balsam poplar/red osier dogwood association.

Plate 6. The aspen-balsam poplar/red osier dogwood association is characterized by a variable shrub understory and a well developed forb understory usually dominated by tall mertensia.

Vegetation

Characteristic Species

Tree Layer	**Populus balsamifera** (d)	Balsam poplar
	Alnus tenuifolia	River alder
Shrub Layer	**Rosa acicularis** (d)	Prickly rose
	Cornus stolonifera (d)	Red osier dogwood
	Viburnum edule	Low-bush cranberry
	Ribes oxyacanthoides	Gooseberry
Forb Layer	**Epilobium angustifolium**	Fireweed
	Mertensia paniculata	Tall mertensia
	Rubus pubescens	Dewberry
	Aster ciliolatus	Lindley's aster
	Petasites palmatus	Palmate-leaved coltsfoot
	Vicia americana	Vetch
	Equisetum spp.	Horsetail
Grass & Graminoid Layer	No constant species	
Mosses & Lichens on Humus	No constant species	
Mosses & Lichens on Trees & Shrubs	**Pylaisiella polyantha**	

Stand Characteristics

Mean canopy height : 19.7 m (sample min., max. = 16, 26)
Mean stem diameter @ 1.3 m : 17.1 cm (sample min., max. = 15, 81)
Mean stand age : 57 yr. (sample min., max. = 15, 81)
Mean stem density (total live stem/ha) 1 104 (sample min., max. = 700, 1 450)

Open to moderately well stocked balsam poplar stands characterize the tree layer of the balsam poplar/red-osier dogwood association. Shrub cover is quite variable, and dominant species include prickly rose and red osier dogwood. White spruce appears to be uncommon, occurring at only 20 per cent of sampled sites. The forb layer is also variable in cover and in general is not as diverse as that of the aspen associations. There are no consistently dominant forb species, although fireweed and tall mertensia may be locally abundant. Grasses, mosses and lichens are all present, but there are no constant species and cover is very low.

Reconnaissance surveys along the Chinchaga River, as well as detailed sampling, showed that balsam poplar community distribution occurs generally in a narrow, discontinuous band paralleling the river banks. While red osier dogwood and rose are generally dominant shrubs, silverberry (**Eleagnus commutata**) sometimes dominates the understory and its occurrence seems to be correlated with sand deposits, especially on point bars.

Wild gooseberry, horsetail and red osier dogwood are indicative of a consistent moisture supply, the latter species typically being associated with relatively rich sites. Plate 7 shows understory vegetation typical of communities belonging to this association.

3.1.8 Discussion: Deciduous Forest Associations

The aspen and aspen-balsam poplar dominated associations of the Keg River study area are primarily of fire origin, and represent different stages in an eventual succession, barring disturbance, to a white spruce climax. Provided that fire is not intense enough to destroy aspen roots, or conditions permit the germination of aspen seed, recolonization of burned areas by aspen is likely to be rapid. Subsequent development of the understory depends upon the survival and

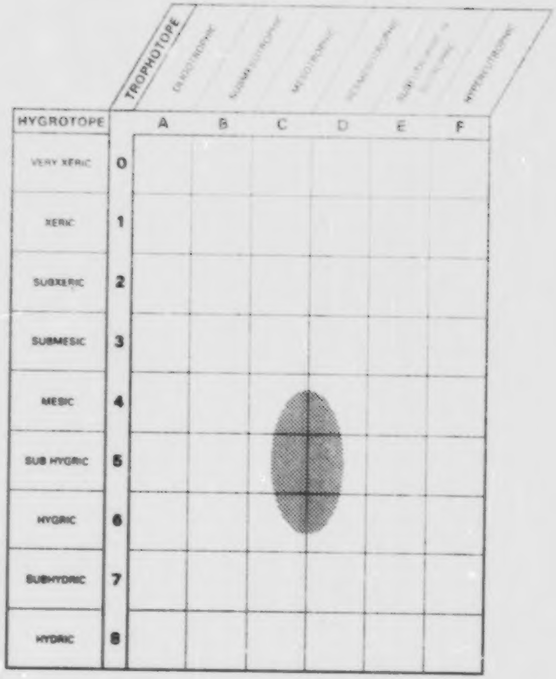

TROPHOTOPE
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.7. Edatopic grid - balsam poplar/red osier dogwood association

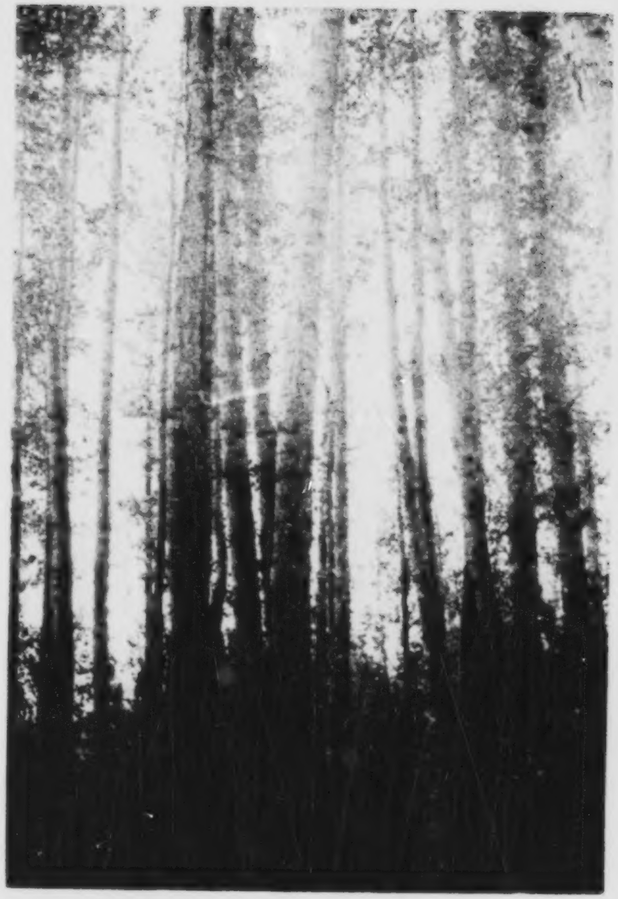


Plate 7. Open to moderately well stocked balsam poplar stands with understories of rose and red osier dogwood are typical of the balsam poplar/red osier dogwood association. This association occurs primarily on fluvial materials.

successful growth of plant propagules in the soil of the burned area, ingress and successful germination and growth of seeds, spores, etc from adjacent land, existing environmental conditions and density of aspen regeneration.

These factors have all contributed to the development of aspen associations which have more or less distinct understories. These associations may be combined into two general groups based on soil moisture and nutrient status; those which occur on moderately moist sites that are moderately well supplied with nutrients, and those which occur on moister, richer sites.

The aspen/buffalo-berry, aspen/low-bush cranberry-rose, and aspen/alder associations belong to the first group. The first two associations are separated primarily by the relative proportions of buffalo-berry, low-bush cranberry and rose, which are all constant species in both. The ecological significance of buffalo-berry vs. low-bush cranberry-rose dominated shrub strata is not known. However, such proportional differences might be related to site and stand differences between the two associations, such as slightly better drainage, different soil chemistries in the rooting zone and higher stem densities in the aspen/low-bush cranberry-rose association. The aspen/alder association, while floristically somewhat similar to the aforementioned associations, is quite different environmentally, and usually occurs on somewhat coarser textured, better drained sites at higher elevations. These three associations may be regarded as modal (occurring on mesic, moderately well drained sites) for the

Boreal Mixedwood Ecoregion defined by Strong and Leggat (1981).

The second group of aspen associations, those occurring on relatively moist, rich sites, includes the aspen/rose/horsetail, aspen/low-bush cranberry-rose-red osier dogwood, and aspen-balsam poplar/red-osier dogwood associations. The first of these occurs on well drained, coarse to medium textured fluvial materials; the latter two occur mainly on moderately well-to poorly drained, fine textured glaciolacustrine deposits. The aspen-balsam poplar/red osier dogwood and aspen/low-bush cranberry-rose-red osier dogwood associations appear to be floristically more diverse than other aspen associations.

Balsam poplar communities may develop in response to both fire and flooding and are not as extensive as aspen-dominated associations. In general, stands belonging to the balsam poplar/red osier dogwood association are found on coarse to fine textured, well drained, fairly moist and nutrient-rich fluvial deposits along streams, and to a lesser degree on slopes.[2]

Succession to white spruce from deciduous forest communities is likely to occur in the absence of fire or other disturbances but generally at a slow rate. White spruce was observed in the tree and shrub layer in only about 40 per cent of sampled aspen communities. Frequency of occurrence varied between zero percent of sample plots for the aspen/rose/horsetail association to 60 per cent of plots for the aspen/low-bush cranberry-rose, and cover values were usually low (<5%). There may be several reasons for poor white spruce regeneration.

---

[2] Birch stands also occur in the study area. The one sampled stand has not been specifically delineated as an association. The data for this stand are presented separately in tables in the appendices; this stand shows the most resemblance floristically and environmentally to the aspen/buffalo-berry or aspen/low-bush cranberry-rose association. Field checking in May, 1985, revealed that birch and white spruce-birch stands are common in some areas along the base of the Naylor Hills, where seepage water inputs are high. These are interspersed with seepage willow communities and almost always have an understory of red osier dogwood. Sites supporting these communities are probably hygric and permesotrophic.

1. Distance from seed source, which is generally regarded as a highly important determinant of natural regeneration;
2. Recurring fires which encourage aspen suckering but destroy white spruce seedlings;
3. Smothering of white spruce seedings by litter;
4. Edaphic conditions (such as a thick litter layer which dries before the root radicle can reach mineral soil, or compact mineral surface horizons which retard root penetration and dry rapidly; and
5. Competition for light, water, and nutrients from other understory plants, which has been implicated in almost every study of white spruce regeneration as a major factor in regeneration success (Dobbs, 1972).

3.2 Coniferous Forest Associations

Although conifer-dominated forests are not as extensive as deciduous forests in the study area, they occupy a significant portion of the Hawk and Naylor Hills and commonly occur along stream courses within both the Peace River and Fort Vermilion lowlands. One white spruce-aspen association, one white spruce association and three pine-dominated associations are described below based on analyses of vegetation and environment data from 35 sites.

3.2.1 White Spruce-Aspen/Low-bush Cranberry-Rose Association **(Picea glauca-Populus tremuloides/Viburnum edule-Rosa acicularis)**

Site and Soil Characteristics

Number of sample sites: 11
Moisture regime : Mesic-subhygric
Nutrient regime : Mesotrophic (permesotrophic)
Slope position : Variable
Mean slope : 2% (sample min., max. = 0, 8)
Aspect : Variable
Mean elevation (masl) : 570 (sample min., max. = 440, 755)
Parent material : Moraine, glaciolacustrine (fluvial)
Soil texture : Moderately fine to fine
Drainage : Moderately well to imperfect
Mean soil reaction : pH 5.1 (sample min., max. = 3.5, 8.0)
Soil classification : Orthic, Dark and Gleyed Gray Luvisols (Gleysols, Regosols, Solonetz)

The white spruce-aspen/low-bush cranberry-rose association occurs mainly on gently undulating morainal or glaciolacustrine parent materials. Because the texture of glaciolacustrine materials is usually finer than that of moraine, soils tend to be somewhat moister and not as well drained as those on moraine. Gleyed Gray Luvisols and seepage within the soil profile are characteristic of sites on glaciolacustrine materials, whereas moderately well to well drained Gray Luvisols occur on moraine. Differences in the soil moisture regime might be partly attributable to slope position and associated subsurface water flow. Sites on moraine are usually slightly higher upslope than those on glaciolacustrine materials and therefore are likely to receive lower slope seepage water inputs.

Soil pH in the rooting zone is on average slightly acidic, but varies widely. Solonetzic soil horizon development was observed on some sites on glaciolacustrine materials, and may be indicative of relatively high exchangeable sodium and magnesium levels. Solonetzic soils are thought to have developed in association with parkland vegetation (Moss, 1952; CSSC, 1978; Wilkinson and Johnson, 1983). Figure 3.8 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Picea glauca** (d)	White spruce
	Populus tremuloides (d)	Trembling aspen
Shrub Layer	**Rosa acicularis** (d)	Prickly rose
	Viburnum edule	Low-bush cranberry
	Populus tremuloides	Trembling aspen
	Shepherdia canadensis	Buffalo-berry
	Picea glauca	White spruce
Forb Layer	**Cornus canadensis**	Bunchberry
	Linnaea borealis	Twinflower
	Rubus pubescens	Dewberry
	Epilobium angustifolium	Fireweed
	Fragaria virginiana	Strawberry
	Mitella nuda	Bishop's cap
	Lathyrus ochroleucus	Peavine
	Orthilia secunda	One-sided wintergreen
Grass & Graminoid Layer	**Elymus innovatus**	Hairy wild rye
	Calamagrostis spp.	Reed grasses
Mosses & Lichens on Humus	**Hylocomium splendens** (d)	Stair-step moss
	Pleurozium schreberi	Schreber's moss
	Eurhynchium pulcherrimum	
Mosses & Lichens on Trees & Shrubs	**Parmelia sulcata**	
	Pylaisiella polyantha	
	Usnea sorediifera	

Evernia mesomorpha
Hypogymnia physodes
Cetraria halei

Stand Characteristics

Mean canopy height : 22.1 m (sample min., max. = 15, 28)
Mean stem diameter @ 1.3 m : 19.5 cm (sample min., max. = 12.1, 35.3)
Mean stand age : 103 yr. (sample min., max. = 64, 154)
Mean stem density (total live stems/ha : 1 415 (sample min., max. = 400, 2 600)

Tall, well stocked stands of mature trembling aspen and maturing white spruce comprise the tree layer of this association. Composition can be quite variable; aspen and white spruce are generally codominant, but aspen is clearly dominant in young stands (less than 85 yr.), while white spruce becomes more abundant as the stands age. Shrub cover is discontinuous. Prickly rose is the dominant shrub and low-bush cranberry, trembling aspen and white spruce are associated constant species occurring with low cover. Buffalo-berry is also a constant constant species but seems to be more frequent on glaciolacustrine materials than on morainal materials.

Bunchberry, twinflower (**Linnaea borealis**) and dewberry are the most common forbs in the forb layer. None occur consistently with high enough cover values to be regarded as dominant, however.

The grass layer is very poorly developed, but hairy wild rye and reed grasses are frequently present with very low cover. Stair-step moss (**Hylocomium splendens**) is the most abundant bryophyte in a usually well-developed moss layer. Numerous mosses and lichens colonize the stems and branches of trees and shrubs in this association. In general, understory species composition is most similar to that of the aspen/buffalo-berry, aspen/low-bush cranberry- rose and aspen/alder associations. Plate 8 shows understory vegetation in a typical stand within the white spruce-aspen/low-bush cranberry-rose association.

3.2.2 White spruce/Feathermoss Association
(**Picea glauca/Hylocomium splendens-Pleurozium schreberi**)

Site and Soil Characteristics

Number of sample sites: 14
Moisture regime : Mesic-hygric
Nutrient regime : Submesotrophic-permesotrophic
Slope position : Variable
Mean slope : 5.6% (sample min., max. = 0, 20)
Aspect : Variable (mainly N, NE, NW)
Mean elevation (masl) : 529 (sample min., max. = 415, 755)
Parent material : Glaciofluvial, fluvial, glaciolacustrine, moraine, colluvial
Soil texture : Medium to moderately fine textured
Drainage : Well to poor
Mean soil reaction (rooting zone) : pH 5-6 (sample min., max. = 3.8, 8.0)
Soil classification : Brunisols, Gleysols and Regosols

The white spruce/feathermoss association occurs on variable parent materials with soils having a wide textural, structural, drainage and pH range. Extensive white spruce stands are mainly associated with the Hawk and Naylor Hills, and with larger streams such as the Meikle, Keg and Kemp Rivers. Sites are moderately moist to very moist as a result of subsurface water flow downslope or along streams. Soil pH values on glaciofluvial and fluvial materials tend to be slightly higher than values on other materials, suggesting that nutrients and particularly exchangeable bases may be more readily available on the former. Figure 3.9 shows the range of moisture and

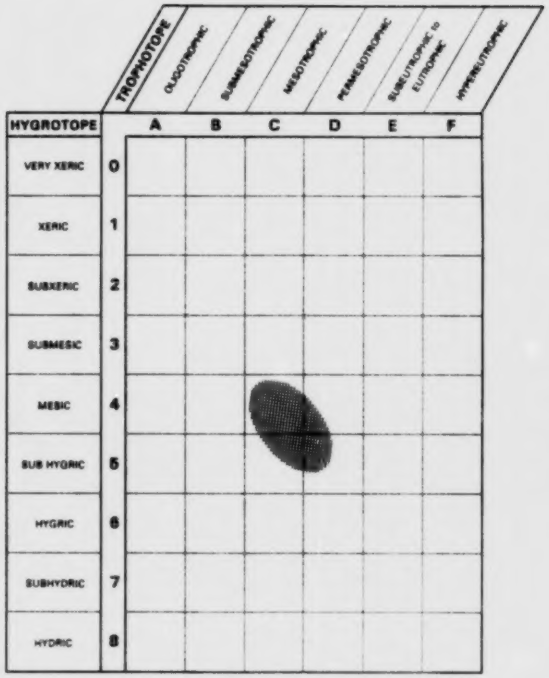

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.8. Edatopic grid - white spruce-aspen/low bush cranberry-rose association

Plate 8. The white spruce-aspen/rose association is characterized by poorly developed shrub and forb layers and a well developed moss layer. Aspen and white spruce occur in variable proportions depending upon the age of the stand, with aspen predominantly in younger stands.

nutrient conditions within which stands belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Picea glauca** (d)	White spruce
Shrub Layer	**Viburnum edule**	Low-bush cranberry
	Rosa acicularis	Prickly rose
	Ribes spp.	Currants, gooseberries
Herb Layer	**Linnaea borealis**	Twinflower
	Cornus canadensis	Bunchberry
	Rubus pubescens	Dewberry
	Mitella nuda	Bishop's cap
	Equisetum spp.	Horsetails
Grass & Graminoid Layer	No constant species	
Moss & Lichens on Humus	**Hylocomium splendens** (d)	Stair-step moss
	Pleurozium schreberi	Schreber's moss
	Ptilium crista-castrensis	Knight's plume moss
Mosses & Lichens on Trees & Shrubs	**Parmelia sulcata**	
	Usnea alpina	
	Evernia mesomorpha	
	Usnea sorediifera	
	Hypogymnia physodes	
	Cetraria spp.	

Stand Characteristics

Mean canopy height : 24.1 (sample min., max. = 19, 29)
Mean stem diameter @ 1.5 m : 19.7 cm (sample min., max. = 12.8, 29.5)
Mean stand age : 118 yr. (sample min., max. = 71, 200)
Mean stem density (total live stems/ha) : 1 740 (sample min., max. = 700, 2 700)

Tall, well-stocked stands of maturing white spruce characterize sites belonging to the white spruce/feathermoss association. Balsam fir (**Abies balsamea**) may also occur in the canopy or just below it, but its occurrence is mainly restricted to higher elevations along the western boundary of the study area. Birch (**Betula papyifera**) is present in many stands but is usually sparse. The shrub layer is sparse and species-poor, with no species occurring abundantly enough to be termed dominant. There is little white spruce regeneration. Balsam fir is present in the shrub stratum wherever it occurs in the tree layer.

The forb layer is similarly sparse and species-poor, and, again, no species occur with consistently high enough cover to be termed dominant. Horsetail (**Equisetum arvense, Equisetum pratense**) may be locally abundant on hygric sites, however. Feathermosses form a nearly continuous mat in the moss and lichen layer, and stair-step moss is usually dominant. Arboreal lichens are consistently present on the boles and branches of white spruce. Plate 9 shows understory vegetation of a typical stand within this association.

3.2.3 Lodgepole Pine/Alder Association (**Pinus contorta/Alnus crispa**)

Site and Soil Characteristics

Number of sample sites	3
Moisture regime	Submesic
Nutrient regime	Submesotrophic
Slope position	Upper slopes
Mean slope	5% (sample min., max. = 2, 8)
Aspect	South, southwest
Mean elevation (masl)	667, (sample min., max. = 600, 700)
Parent material	Glaciofluvial veneer over residual, moraine

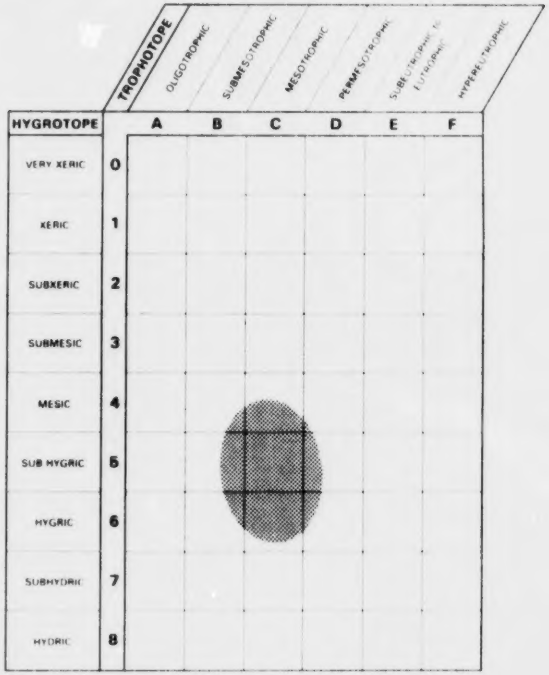

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC TO EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.9. Edatopic grid - white spruce/feathermoss association.

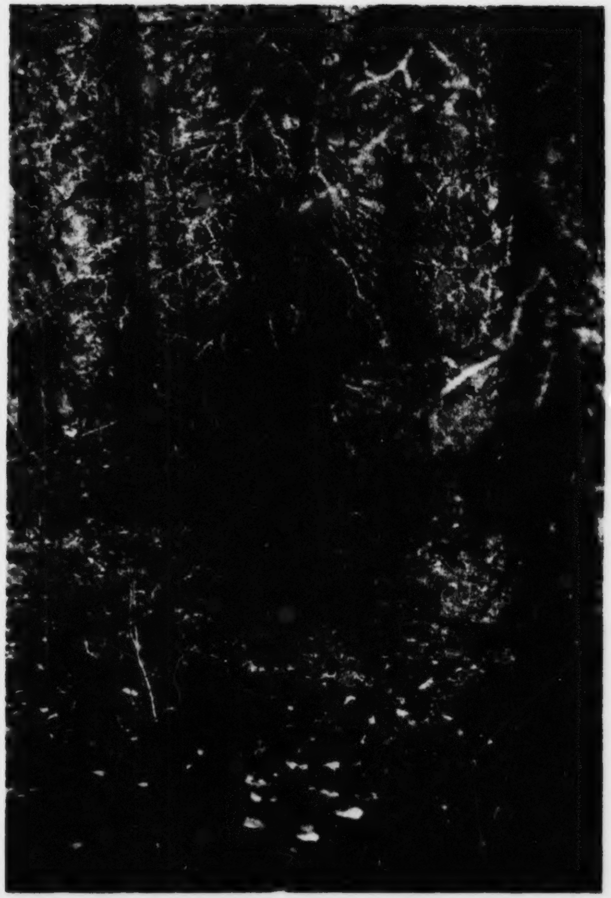


Plate 9. The white spruce/feathermoss association is characterized by a continuous feathermoss layer under a closed spruce canopy. Vascular understory vegetation is very sparse, except under canopy openings.

Soil texture : Medium to coarse (moderately fine)
Drainage : Well to rapid
Mean soil reaction (B horizon) : pH 4.8 (sample min., max. = 4.1, 6.0)
Soil classification : Eluviated Eutric Brunisols, Brunisolic Gray Luvisol

The lodgepole pine/alder association occurs on well drained, mainly coarse textured glaciofluvial veneers over gently rolling residual material, and on gently undulating moraine, at higher elevations in the Naylor and Hawk Hills. Eluviated Eutric Brunisols have developed on glaciofluvial materials and Brunisolic Gray Luvisols may be expected on slightly finer textured stony till deposits. Sites were judged to be submesic and submesotrophic (moderately dry and nutrient poor, respectively). Figure 3.10 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Pinus contorta** (d)	Lodgepole pine
Shrub Layer	**Alnus crispa** (d)	Green alder
	Vaccinium myrtilloides	Blueberry
	Ledum groenlandicum	Labrador tea
	Picea glauca	White spruce
Forb Layer	**Vaccinium vitis-idaea** (d)	Bog cranberry
	Linnaea borealis	Twinflower
	Epilobium angustifolium	Fireweed
	Maianthemum canadense	Two-leaved Solomon's seal
Grass & Graminoid Layer	**Calamagrostis stricta**	Reed grass
Mosses & Lichens on Humus	**Pleurozium schreberi**	Schreber's moss
	Ptilium crista-castrensis	Knight's plume moss

Stand Characteristics

Mean canopy height : 16.7 m (sample min., max. = 15, 19)
Mean stem diameter @ 1.3 m : 14.8 cm (sample min., max. = 12, 19.7)
Mean stand age : 57yr. (sample min., max. = 56, 58)
Mean stem density (total live stems/ha) : 1 900 (sample min., max. = 600, 2 700)

Young, often densely stocked stands of lodgepole pine make up the tree layer of the lodgepole pine/alder association; white spruce is also an important component on some sites. The shrub layer is dominated by green alder. The forb layer is species-poor and variable in cover. Bog cranberry (**Vaccinium vitis-idaea**) is the most prevalent species in cover. Grass cover is sparse with reed grass being the only constant species. Feathermosses form a continuous carpet over humus, and Schreber's moss is the most abundant bryophyte. The abundance of bog cranberry is indicative of acidic surface pH values. Plate 10 shows vegetation within a typical stand belonging to this association.

Reindeer lichen (**Cladina mitis**) was observed on humus at both of the sites occurring on glaciofluvial materials, and is associated with dry surface conditions.

3.2.4 Lodgepole Pine-Black Spruce/Labrador Tea/Feathermoss Association **(Pinus contorta-Picea mariana/Hylocomium splendens-Pleurozium schreberi)**

Site and Soil Characteristics

Number of sample sites: 5
Moisture regime : (Subxeric) submesic to mesic
Nutrient regime : Submesotrophic

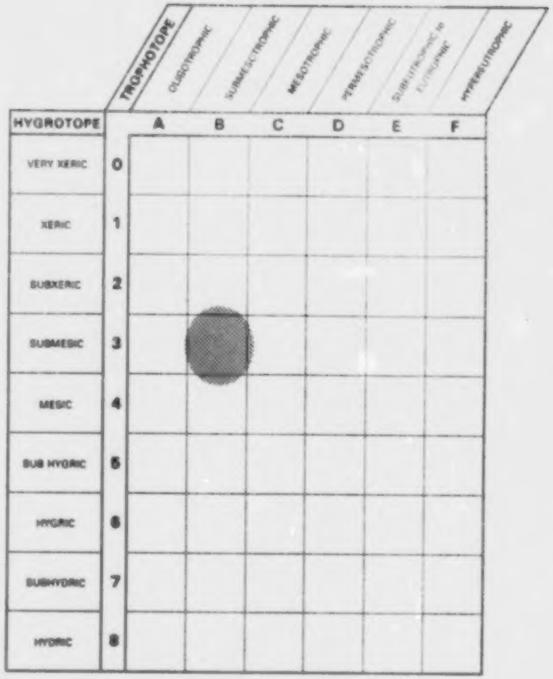

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
XERIC
SUBXERIC
SUBMESIC
MESIC
SUB HYGRIC
HYGRIC
SUBHYDRIC
HYDRIC
0
1
2
3
4
5
6
7
8

Fig. 3.10. Edatopic grid - lodgepole pine/alder association

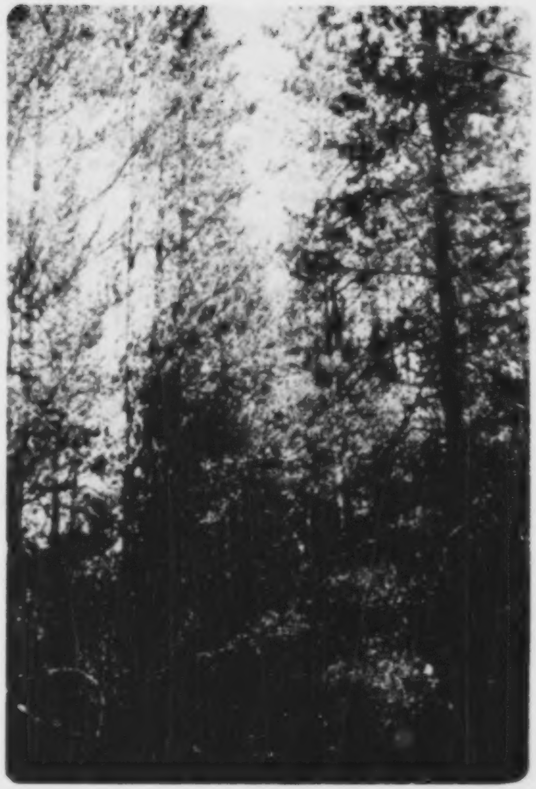


Plate 10. Young lodgepole pine stands with understories dominated by green alder and a continuous feathermoss carpet characterize the lodgepole pine/alder association. These stands have developed mainly on coarser-textured parent materials.

Slope position : Upper slopes
Mean slope : 1.6% (sample min., max. = 0, 2)
Aspect : Variable
Mean elevation (masl) : 714 (sample min., max. = 689, 735)
Parent material : Glaciofluvial (fluvial, moraine)
Soil texture : (Coarse) medium to moderately fine
Drainage : Moderately well to well
Mean soil reaction (B horizon) : pH 5.0 (sample min., max. = 3.9, 5.5)
Soil classification : Eutric and Dystric Brunisols (Brunisolic Gray Luvisol)

This association occurs mainly on moderately well-drained, very gently undulating glaciofluvial parent materials at higher elevations in the Naylor and Hawk Hills. Sites are generally classified as submesotrophic (somewhat deficient in nutrients), partly because of acidic soils and coarser textured, strongly leached parent material. Stands belonging to this association are judged to be moister than those of the lodgepole pine/alder association as gleying and seepage were noted in some plots. Figure 3.11 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Pinus contorta** (d)	Lodgepole pine
	Picea mariana	Black spruce
Shrub Layer	**Picea mariana** (d)	Black spruce
	Ledum groenlandicum (d)	Labrador tea
	Vaccinium myrtilloides	Blueberry
Forb Layer	**Vaccinium vitis-idaea** (d)	Bog cranberry
	Cornus canadensis	Bunchberry
	Linnaea borealis	Twinflower
	Vaccinium caespitosum	Dwarf bilberry
	Equisetum sylvaticum	Wood horsetail
	Petasites palmatus	Palmate-leaved coltsfoot

Grass & Graminoid Layer	**Calamagrostis** sp.	Reed grass
Mosses & Lichens on Humus	**Pleurozium schreberi** (d)	Schreber's moss
	Hylocomium splendens (d)	Stair-step moss
	Ptilium crista-castrensis	Knight's plume moss
	Cladina mitis	Reindeer lichen
	Peltigera aphthosa	Studded-leather lichen
	Cladina gracilis	
	Stereocaulon tomentosum	
Mosses & Lichens on Trees & Shrubs	**Bryoria fuscescens**	
	Evernia mesomorpha	
	Cetraria halei	
Mosses & Lichens on Trees & Shrubs (continued)	**Usnea sorediifera**	
	Hypogymnia physodes	
	Cetraria pinastri	
	Parmelia sulcata	

Stand Characteristics

Mean canopy height : 15.0 m (sample min., max. = 10, 20)
Mean stem diameter @ 1.3 m : 14.6 cm (sample min., max. = 10.6, 24.4)
Mean stand age : 55 yr. (sample min., max. = 41, 79)
Mean stem density (total live stems/ha) : 1 480 (sample min., max. = 825, 2 150)

Young lodgepole pine constitutes the main canopy of this association, with a well developed understory tree stratum of black spruce (**Picea mariana**). Both black spruce and labrador tea (**Ledum groenlandicum**) are dominant components of a variable, species-poor shrub layer. The forb layer is patchy with fairly low total cover and is dominated by bog cranberry. Grass cover is very low, reed grasses being the only constant species. Feathermosses usually form a more or less continuous carpet. Reindeer lichen and studded-leather lichen (**Peltigera aphthosa**) are the more abundant lichen species. Labrador tea and bog cranberry are generally indicative of acidic surface soil conditions, and reindeer lichen is indicative of dry surface conditions. Plate 11 shows typical understory vegetation for this association.

3.2.5 Lodgepole Pine-Aspen Association (**Pinus contorta-Populus tremuloides**)

Site and Soil Characteristics

Number of sample sites: 2
Moisture regime : Subhygric-hygric
Nutrient regime : Mesotrophic
Slope position : Upper slopes
Mean slope : 2% (sample min., max. = 1, 3)
Aspect : Northerly
Mean elevation (masl) : 601 (sample min., max. = 552, 650)
Parent material : Moraine, lacustrotill
Soil texture : Moderately fine to fine
Drainage : Imperfect
Mean soil reaction (B horizon) : pH 5.6 (sample min., max. = 4.1, 7.0)
Soil classification : Gleyed Solonetzic Gray Luvisol, Orthic Gleysol

The lodgepole pine-aspen association occurs at higher elevations in the Clear Hills Upland on moist, imperfectly drained sites. There are too few sample sites to adequately define the environmental parameters of this association; it does, however, appear to be somewhat moister than other lodgepole pine associations in the study area. Figure 3.12 shows the range of moisture and nutrient conditions within which the two communities belonging to this association were observed to occur.

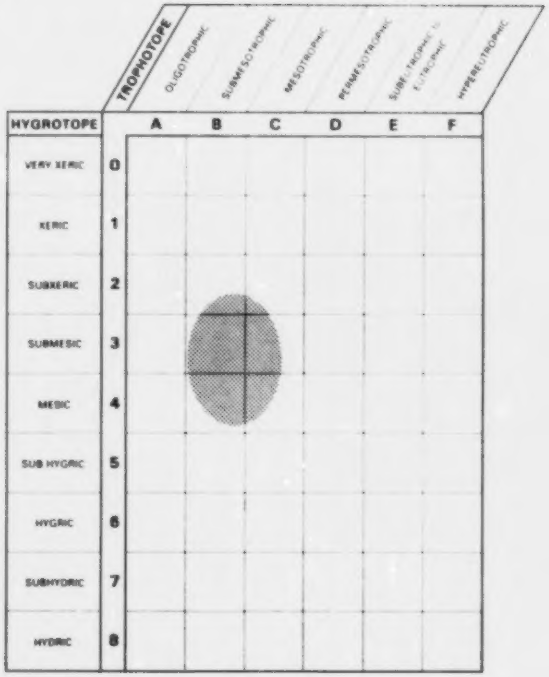

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.11. Edatopic grid - lodgepole pine-black spruce/labrador tea/feathermoss association.

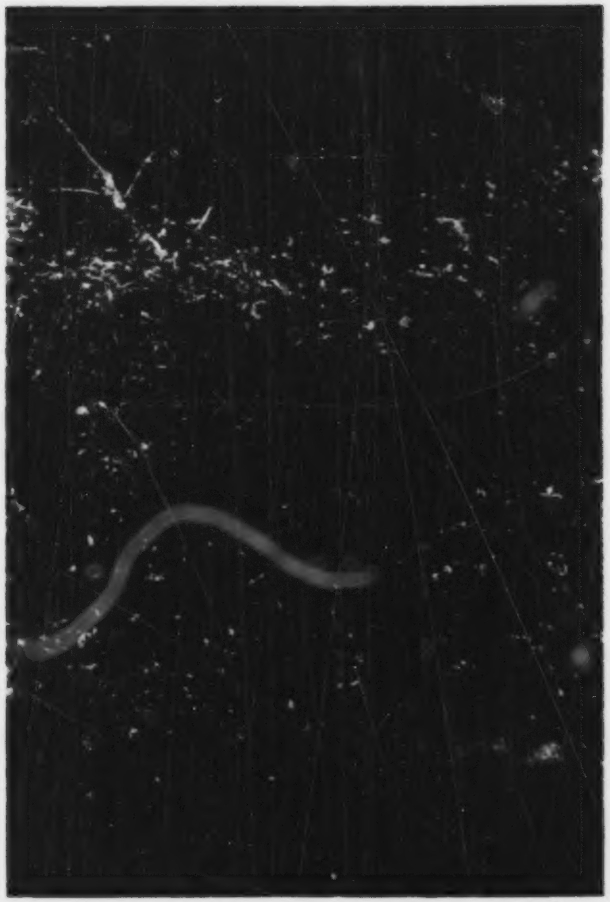


Plate 11. Typical ground vegetation of the lodgepole pine-black spruce/labrador tea/feathermoss association includes labrador tea, blueberry, bog cranberry, feathermosses and lichens.

Vegetation

Characteristic Species

Tree Layer	**Pinus contorta** (d)	Lodgepole pine
	Populus tremuloides (d)	Trembling aspen
Shrub Layer	**Rosa acicularis** (d)	Prickly rose
	Shepherdia canadensis	Buffalo-berry
Forb Layer	**Cornus canadensis**	Bunchberry
	Epilobium angustifolium	Fireweed
	Fragaria virginiana	Strawberry
	Lathyrus ochroleucus	Peavine
	Petasites palmatus	Palmate-leaved coltsfoot
	Rubus pubescens	Dewberry
Grass & Graminoid Layer	**Elymus innovatus**	Hairy wild rye
Mosses & Lichens on Humus	**Hylocomium splendens**	Stair-step moss
	Pleurozium schreberi	Schreber's moss

Stand Characteristics

Mean canopy height : 19 m (sample min., max. = 18, 20)
Mean stem diameter @ 1.3 m : 12.8 m (sample min., max. = 10.9, 14.7)
Mean stand age : 48 yr. (sample min., max. 44, 52)
Mean stem density (total live stems/ha) : 2 000 (sample min., max. = 1 400, 2 600)

Young, well stocked stands of codominant lodgepole pine and aspen are characteristic of this association. The shrub, forb and grass layers are all poorly developed. Although the sample size is probably too small to adequately determine all of the species that are likely to be constant, understory composition bears more similarity to that of aspen-dominated stands than of pine-dominated stands. Plate 12 shows understory vegetation of one of the sample sites to this association.

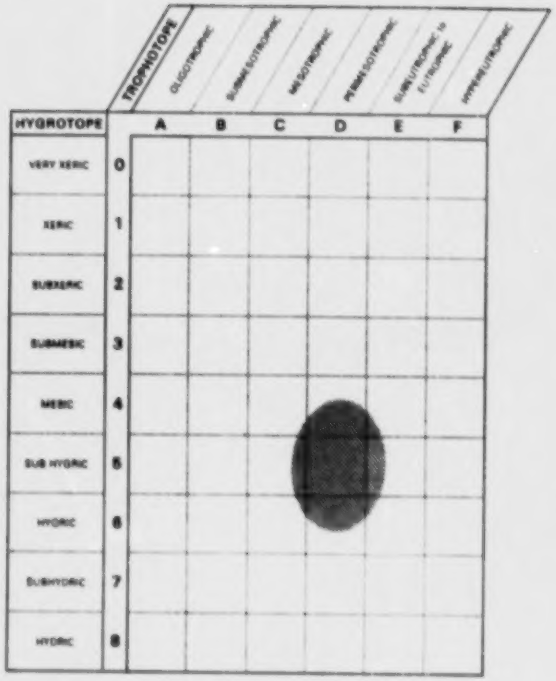


Fig. 3.12. Edatopic grid - lodgepole pine-aspen association

Plate 12. Variable, but poorly developed understories along with codominant aspen and lodgepole pine understories are typical of the lodgepole pine-aspen association. Rose is the dominant shrub species.

3.2.6 Discussion: Coniferous Forest Associations

White spruce-dominated associations of the Keg River study area occur under moderately moist to very moist conditions on a variety of parent materals having variable nutrient status, texture and drainage. Stands belonging to the white spruce and white spruce-aspen associations are on average the oldest in the study area, indicating that fire frequency is lower in areas which support white spruce dominated stands than in areas with aspen stands. Higher soil moisture along river courses and in seepage areas along slope bases, and cooler, moister climates in the Hawk and Naylor Hills, have likely acted to reduce fire frequency. Subsequent invasion of burns by white spruce has probably been facilitated at higher elevations and along stream courses by proximity to relict spruce stands untouched by fire. The very intense fires often associated with white spruce stands (LaRoi, 1967 in Alberta, A Natural History) might also favor the development of these stands, provided that temperatures are sufficiently high to kill aspen roots and that there is a seed source nearby.

Understory development in white spruce-dominated stands appears to be strongly influenced by canopy closure. In general, the older stands have tall, well developed canopies which restrict sunlight penetration and the shrub, forb and grass strata are correspondingly poorly developed.

Lodgepole pine-dominated associations occur only at the highest elevations within the study area on the Hawk and Naylor Hills. Both lodgepole pine and lodgepole pine-black spruce associations are typically found on moderately well to well drained dry acidic soils which have developed on glaciofluvial or morainal parent materials. These associations are probably outliers of very large lodgepole pine stands to the west but are mainly restricted to edaphically dry sites within the study area.

Stands belonging to the Lodgepole pine-Aspen association occur on somewhat finer textured, less well drained and moister sites than either of the other lodgepole pine associations. Lodgepole pine may be able to compete with aspen on moister sites at higher elevations due to the effects of climate on fire frequency; as discussed above for white spruce association, cooler, moister conditions may reduce the incidence of fire, and allow the lodgepole pine to mature and produce cones. At the same time, when fire does occur, temperatures may be high enough to kill aspen roots and at least initially remove the competitive advantage that aspens have, resulting in lodgepole pine-aspen stands.

Understory development in lodgepole pine associations is partly dependent upon edaphic site factors. Ericaceous shrubs are characteristic of the lodgepole pine-dominated stands on acidic soils with lichens occurring on the drier sites. Plants occurring under lodgepole pine-aspen stands are generally indicative of higher soil moisture levels. Despite the qualitative differences in plant composition, however, all three associations have poorly developed understories.

3.3 Wetland Associations

Wetland communities occur throughout the Keg River study area on level, sloping and depressional terrain receiving water from surrounding areas. Four wetland associations are described below based on analyses of vegetation and environment data from 24 sites.

3.3.1 Black Spruce/Labrador Tea/Moss Association (**Picea mariana/Ledum groenlandicum/moss**)

Site and Soil Characteristics

Number of sample sites: 11
Moisture regime : Hygric to subhydric
Nutrient regime : Submesotrophic
Slope position : Level areas or depressions
Mean slope : 2.4% (sample min., max. = 0, 10)
Aspect : Variable
Mean elevation (masl) : 530 (sample min., max. = 411, 720)
Parent material : Organic, organic veneers and blankets over glaciolacustrine, glaciofluvial and fluvial
Soil texture : Mesic organic (coarse to fine textured in mineral horizons)
Drainage : Poor to very poor
Mean soil reaction (organic horizon): 5.5 (sample min., max. = 4.5, 7.5)
Soil classification : Mesisols

The black spruce/labrador tea/moss association occurs throughout the study area on level to gently sloping organic accumulations which are generally found in shallow depressions. Sites are almost invariably poorly drained and have water near or at the soil surface. Soil pH is variable but is usually acidic, and most sites are judged to be submesotrophic. Some stands, mainly those north of a line running east-west through Keg River settlement, may have frozen substrates at various depths throughout part or all of the summer months. Moss (1953b), Brown (1967) and Lindsay and Odynsky (1965) have also reported frozen soils in the area. Figure 3.13 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Picea mariana** (d)	Black spruce
Shrub Layer	**Ledum groenlandicum** (d)	Labrador tea
	Picea mariana (d)	Black spruce
Forb Layer	**Vaccinium vitis-idaea**	Bog cranberry
	Rubus chamaemorus	Cloudberry
	Smilacina trifolia	Three-leaved Solomon's-seal
Mosses & Lichens	**Hylocomium splendens**	Stair step moss
	Pleurozium schreberi	Schreber's moss
	Sphagnum fuscum	Sphagnum moss
	Tomenthypnum nitens	Brown moss
	Sphagnum warnstorfii	Sphagnum moss
	Mylia anomala	
	Cladina mitis	Reindeer lichen
	Cladonia spp.	Cladonia
Mosses & Lichens on Trees & Shrubs	**Evernia mesomorpha**	
	Cetraria pinastri	
	Hypogymnia physodes	
	Cetraria halei	
	Usnea sorediifera	

Stand Characteristics

Mean canopy height : 8.2 m (sample min., max. = 5, 23)
Mean stem diameter @ 1.3 m : 10.3 cm (sample min., max. = 8.6, 13.5)
Mean stand age : 78 yr. (sample min., max. = 34, 135)
Mean stem density (total live stems/ha) : 870 (sample min., max. = 475, 1 650)

Fens supporting sparse open stands of stunted black spruce and the occasional tamarack (**Larix laricina**) and a well developed but species-poor shrub layer dominated by labrador tea characterize this association. There are few forb and moss species which are constant throughout sampled sites in the association; rather, species seem to aggregate into groups that indicate nutrient status, according to a classification developed by Vitt and others (unpublished). Nutrient-poor sites support **Sphagnum fuscum**, **Mylia anomala**, three-leaved Solomon's-seal (**Smilacina trifolia**) and cloudberry (**Rubus chamaemorus**). Black spruce fens which support certain sphagnum mosses (such as **Sphagnum warnstorfii**) and brown moss (**Tomenthypnum nitens**) are classified as intermediate fens having better cation status. Tamarack, a tree with high nutrient requirements (Krajina, 1969) is also more commonly associated with intermediate fens than with poor fens.[3] Plate 13 shows vegetation typically found in communities belonging to this association.

3.3.2 Willow Shrubland Association - Depressional and Level Terrain

Site and Soil Characteristics

Number of sample sites:	8
Moisture regime :	Subhydric to hygric
Nutrient regime :	Mesic to permesotrophic
Slope position :	Level areas, depressions
Mean slope :	1% (sample min., max. = 0, 2)
Aspect :	Variable
Mean elevation (masl) :	477 (sample min., max. = 425, 630)
Parent material :	Deep organic deposits, organic veneers over lacustrine, morainal deposits.

---

[3] In the vegetation and environmental/soils tables for this association in Appendix 1, sample plots are ordinated so that the most nutrient poor sites are to the left. This ordination was accomplished with reference to the classification developed by Vitt and others (unpublished).

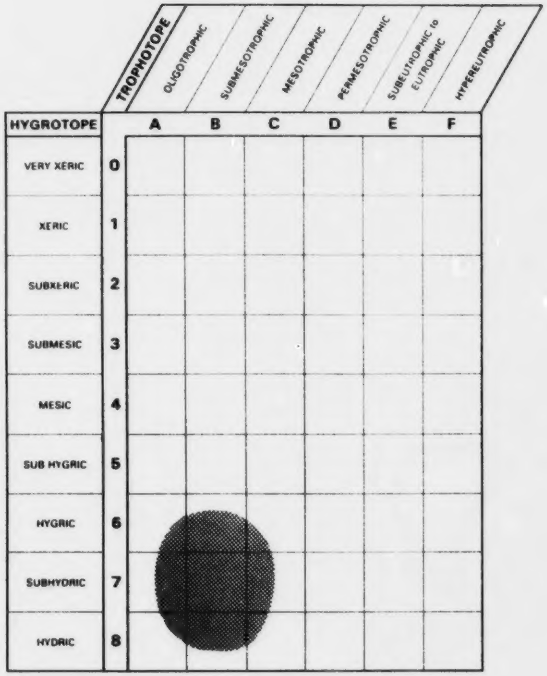

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC 0
XERIC 1
SUBXERIC 2
SUBMESIC 3
MESIC 4
SUB HYGRIC 5
HYGRIC 6
SUBHYDRIC 7
HYDRIC 8

Fig. 3.13. Edatopic grid - black spruce/labrador tea/moss association

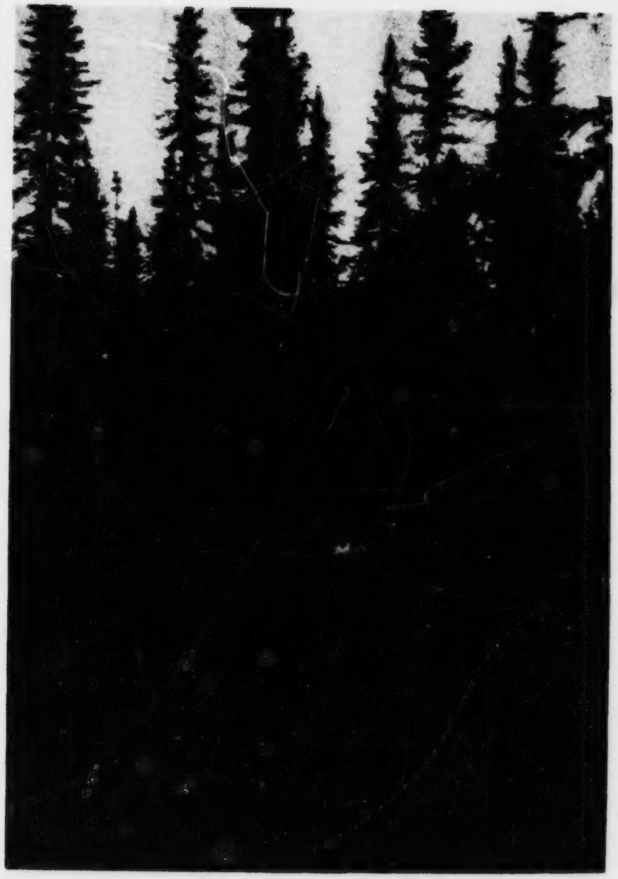


Plate 13. The black spruce/labrador tea/moss association occurs in level to depressional areas where the water table is very near the surface. Labrador tea, bog cranberry, sphagnum and/or feathermosses and lichens are common ground vegetation. Two sides of the 10 x 10 m plot are delimited by the plot string.

Soil texture : Medium to moderately fine
Drainage : Poorly to very poor
Mean soil reaction (rooting zone) : pH 6.5 (sample min., max. = 5.5, 8.0)
Soil classification : Terric Humisols, Mesisols, Gleysols

This willow association occurs on level to very gently sloping terrain or in depressions throughout the study area. Poorly drained organic materials may occur as blankets or veneers over glaciolacustrine and morainal substrates. The water table is at or very near to the soil surface. Soil pH is mildly acid to mildly alkaline, suggesting that nutrients and particularly exchangeable bases are readily available. Soils may be frozen at variable depths throughout part or all of the growing season north of the Keg River settlement. Figure 3.14 shows the range of moisture and nutrient conditions within which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Salix bebbiana** (d)	Bebb willow
	Salix discolor	Willow
Shrub Layer	**Salix spp.**	Willow
	Betula pumila	Bog birch
	B. glandulifera	
	Ledum groenlandicum	Labrador tea
Forb Layer	**Equisetum arvense**	Common wood horsetail
	Rubus pubescens	Dewberry
Grass & Graminoid Layer	**Calamagrostis canadensis**	Marsh reed grass
	Carex aquatilis	Water sedge

Mosses & Lichens on Humus	**Aulacomnium palustre**	(Moss)
	Sphagnum warnstorfii	Sphagnum moss
	Tomenthypnum nitens	Brown moss
	Bracythecium salebrosum	(Moss)

This association is variable in physiognomy; the main canopy is continuous and nearly unbroken with an average foliar cover of about 80 percent. It ranges in height from one or two metres (low shrub communities) to about 10 metres (tall shrub communities).

In low shrub willow communities, a variety of willow species may be dominant. Labrador tea and bog birches (**Betula pumila, B. glandulifera**) are also constant and frequently abundant in these communities. Dewberry is the only constant forb species, occurring with low cover. Water sedge (**Carex aquatilis**) dominates the well developed grass and graminoid layer of low shrub communities. Brown moss, sphagnum moss (**Sphagnum warnstorfii**) and **Aulacomnium palustre** are the more common species in the generally discontinuous moss layer.

Bebb willow (**Salix bebbiana**) is dominant in the canopy of tall shrub willow communities. Red osier dogwood, gooseberry and bracted honeysuckle (**Lonicera involucrata**) are constant species in an open discontinuous low shrub understory. Common field horsetail (**Equisetum arvense**) is constant and often dominant in the forb layer. Dewberry, tall mertensia, Lindley's aster (**Aster ciliolatus**), bedstraw (**Galium** spp.) and common pink wintergreen (**Pyrola asarifolia**) are also constant in this layer. The grass and graminoid layer is usually poorly developed and marsh reed grass is the only constant species. It may be very abundant, particularly under more open willow canopies, and often forms a continuous and dense cover in the open spaces between tall willow clumps. The moss layer is very sparse under tall shrub willow communities, the only constant species being **Bracythecium salebrosum**. The presence of red-osier dogwood in the tall shrub communities may be indicative of somewhat richer site conditions (better base status) than in low shrub communities. Plate 14 shows the general appearance of vegetation within communities belonging to the willow shrubland association.

3.3.3 Seepage Willow Association

Number of sample sites: 3
Moisture regime : Hygric (seepage waters)
Nutrient regime : Permesotrophic (seepage waters)
Slope position : Lower slopes
Mean slope : 4.7% (sample min., max. = 1, 10)
Aspect : Variable
Mean elevation (masl) : 523 (sample min., max. = 460, 568)
Parent material : Fluvial and fluvial veneers, organic veneers over fluvial
Soil texture : Moderately coarse to moderately fine
Drainage : Poor
Mean soil reaction (rooting zone) : pH 6.8 (sample min., max. = 6.1, 7.3)
Soil classification : Rego Gleysols, Humic Gleysols

The seepage willow association occurs throughout the study area on gently to moderately sloping terrain. It is not areally extensive, and is most likely to develop along lower slopes on fluvial (slopewash) deposits. Poorly drained Gleysols and seepage within the soil profile are indicative of hygric (very moist) conditions. Neutral to alkaline pH values and seepage suggest that these sites are also nutrient-rich. Figure 3.15 shows the range of moisture and nutrient conditions within

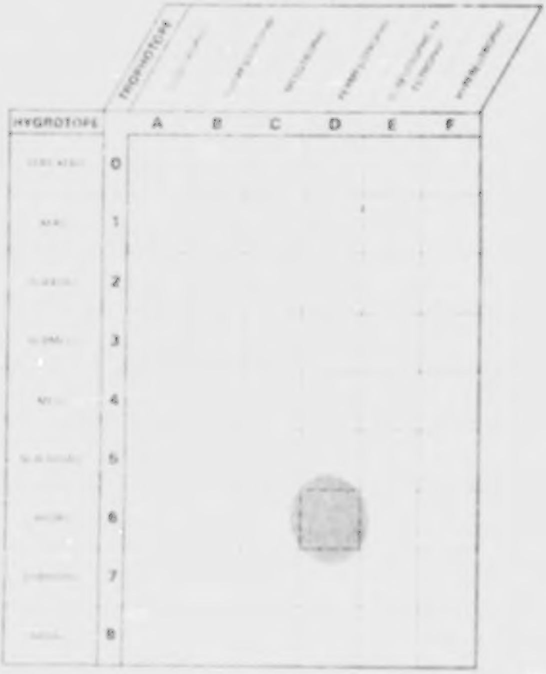

TROPHOTOPE
HYGROTOPE
A
B
C
D
E
F
0
1
2
3
4
5
6
7
8

Fig. 3.14. Edatopic grid - willow shrubland association - level and depressional terrain

Plate 14. Closed willow fens with canopies of variable heights and understories of forbs, sedges, grasses and moss characterize the willow shrubland association. These associations have developed on level to depressional terrain with either peaty gleysolic or organic soils.

which communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Tree Layer	**Salix** spp. (d)	Willows
Shrub Layer	**Salix** spp. (d)	Willows
	Cornus stolonifera (d)	Red osier dogwood
	Ribes oxyacanthoides	Gooseberry
	Viburnum edule	Low-bush cranberry
	Rosa acicularis	Prickly rose
	Rubus idaeus	Wild red raspberry
Forb Layer	**Delphinium glaucum** (d)	Tall larkspur
	Mertensia paniculata	Tall mertensia
	Actaea rubra	Baneberry
	Galium triflorum	Sweet-scented bedstraw
	Epilobium angustifolium	Fireweed
	Equisetum spp.	Horsetails
	Aster ciliolatus	Lindley's aster
	Rubus pubescens	Dewberry
	Mitella nuda	Bishop's cap
	Fragaria virginiana	Strawberry
	Viola renifolia	Kidney-leaved violet
Grass & Graminoid Layer	**Calamagrostis canadensis**	Marsh reed grass
Mosses & Lichens on Humus	No constant species	
Mosses & Lichens on Trees & Shrubs	**Parmelia sulcata**	
	Cetraria halei	
	Pylaisiella polyantha	

The seepage willow association is characterized by a tree and tall shrub layer having very high cover and consisting primarily of Bebb willow (**Salix bebbiana**), with river alder (**Alnus tenuifolia**) and other willow species occurring to a lesser extent.

Red osier dogwood is the dominant shrub of a diverse, continuous low shrub layer (up to 2.5 m). The forb layer is well developed and diverse, with tall larkspur (**Delphinium glaucum**) as the dominant species. Marsh reed grass is the only constant species in the grass layer, but occurs with relatively high cover compared to most other associations. Plants such as red osier dogwood, tall larkspur and baneberry (**Actaea rubra**) are indicative of relatively rich site conditions. Plate 15 shows vegetation of one of the sampled stands belonging to this association.

3.3.4 Sedge Fen Association

Site and Soil Characteristics

Number of sample sites: 2
Moisture regime : Hydric
Nutrient regime : Mesotrophic
Slope position : Depressions
Mean slope : 0%
Aspect : Level
Mean elevation (masl) : (Sample min., max. = 425, 695)
Parent material : Organic, organic veneer
Soil texture : Fibric, mesic
Drainage : Very poor
Mean soil reaction
(organic horizon): pH 5.1 (sample min., max. = 4.0, 6.2)
Soil classification : Typic Fibrisol, Terric Mesisol

The sedge fen association appears to be rather limited in extent within the study area as indicated by ground surveys and helicopter overflights. It occurs in shallow depressions often as inclusions within willow shrublands or at the bottom of steep-sided glacial meltwater channels in the Clear Hills Upland. It is the wettest of the terrestrial associations in the area, and open water and very poorly drained organic soils are characteristic. Soil pH values tend to be

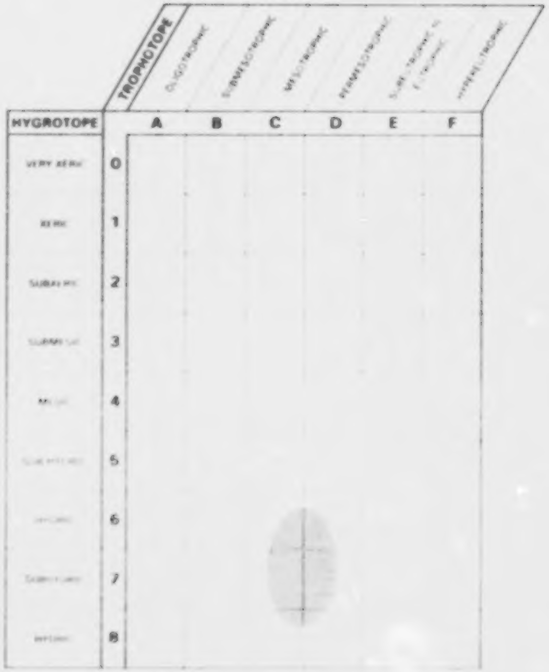


Fig. 3.15. Edatopic grid - seepage willow association

Plate 15. Tall, well developed stands of willow with a lush understory dominated by red osier dogwood and tall larkspur characterize the seepage willow association. Communities belonging to this association occur on lower slopes where mineral-rich groundwater flows through the soil profile.

acidic, but it is probable that there is subsurface water flow, given the topographic location of sedge communities, that would provide a good nutrient supply. Based upon a limited sample size and the above assumption, stands belonging to the sedge fen association are judged to be moderately well supplied with nutrients (mesotrophic). Figure 3.16 shows the range of moisture and nutrient conditions within which the two sampled communities belonging to this association were observed to occur.

Vegetation

Characteristic Species

Low Shrub Layer	**Salix planifolia**	Willow
Forb Layer	**Potentilla palustris** **Galium trifidum**	Marsh cinquefoil Small bedstraw
Grass and Graminoid Layer	**Carex aquatilis** **Calamagrostis canadensis** **Carex rostrata**	Water sedge Marsh reed grass Beaked sedge
Moss Layer	No constant species	

Based on limited sampling, the sedge fen association is characterized by a sparse low shrub layer (predominantly willow), a forb layer composed of species typically associated with marshy habitats, and a well developed, continuous cover of sedges and grasses. Mosses may or may not be abundant. According to Vitt (pers. comm.) communities dominated by beaked sedge (**Carex rostrata**) are indicative of relatively nitrogen rich conditions and flowing water, whereas communities dominated by water sedge (**Carex aquatilis**) are indicative of calcium rich stagnant water. Plate 16 shows vegetation characteristic of this association.

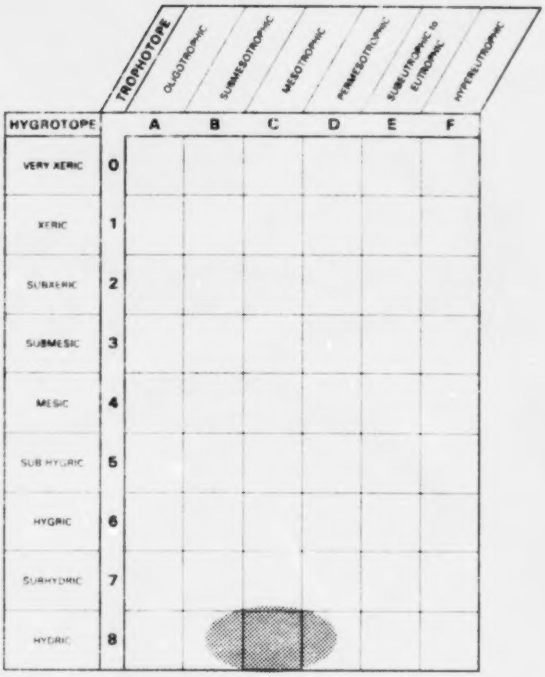

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.16. Edatopic grid - sedge fen association

Plate 16. Low, wet areas dominated by sedge and other plants characteristic of wet habitats belong to the sedge fen association. Sedge communities appear to be relatively small and are dispersed throughout the study area.

3.3.5 Discussion: Wetland Associations

Of the four wetland associations described above, the black spruce/labrador tea/moss and willow shrubland associations are by far the most extensive. Black spruce fens generally have a well developed moss layer over organic accumulations and tend to have more acidic surface horizons than willow-dominated fens. Both appear to represent stages in wetland development; the species composition of stands belonging to these associations is dependent to some degree on the chemical quality of subsurface water flow and its nearness to the surface. Sedge fens are the wettest of the wetland associations and are neither common nor extensive in the area.

The seepage willow association differs markedly from the above three wetland associations in both plant composition and environmental parameters. Stands belonging to this association occur along slopes where seepage water flows through mineral soil throughout the growing season, supporting a suite of plant species indicative of rich, very moist to wet site conditions. Some of these species also occur with tall-shrub willow communities belonging to the willow shrubland association. There may therefore be a continuum along a soil moisture/nutrient gradient between the willow shrubland association on depressions and level areas and the seepage willow association.

3.4 Grassland Association
(**Carex pensylvanica-Stipa-Agropyron**)

Site and Soil Characteristics

Number of sample sites: 1
Moisture regime : Subxeric
Nutrient regime : Permesotrophic
Slope position : Upper slopes, Meikle River
Slope : 45%
Aspect : 210
Elevation (masl) : 470
Parent material : Colluvium
Soil texture : Moderately fine textured
Drainage : Rapid
pH (B horizon) : 7.6
Soil classification : Orthic Black Chernozem

The grassland association is very limited in extent, occurring in small patches on steep, south-facing slopes along the Meikle River. Rapidly drained, moderately fine textured colluvium on which Orthic Black Chernozems have developed is probably characteristic of these grasslands. Slope and aspect play a major role in determining moisture conditions which are judged to be subxeric due to rapid runoff and higher evapotranspiration. Compared to other associations, there is a considerable amount of exposed mineral soil. Because the soil pH suggests that cations such as calcium are abundant, this site was ranked as permesotrophic. Figure 3.17 shows the range of moisture and nutrient conditions which are likely to occur within communities belonging to this association.

Vegetation

Important Species[4]

Shrub Layer	**Artemisia frigida** (d)	Pasture sage
	Rosa woodsii	Common wild rose
Forb Layer	**Solidago missouriensis**	Goldenrod
Grass & Graminoid Layer	**Carex pensylvanica** (d)	Sedge
	Agropyron trachycaulum (d)	Wheatgrass
	Stipa viridula (d)	Green needle grass
	Stipa curtiseta	Needle grass

The grassland association is dominated by xerophytic sedges and grasses, with pasture sage (**Artemisia frigida**) as the major shrub. Very shallow concavities along south-facing slopes support low shrubs such as common wild rose and saskatoon (**Amelanchier alnifolia**).

This association does not appear to be representative of that which existed in the Keg River prairie prior to cultivation. According to Moss (1952), needlegrass was rare or absent in the wheatgrass-sedge (**Agropyron trachycaulum-Carex** spp.) community he studied near Keg River Post. This community was also characterized by species associated with moister habitats such as tall mertensia, meadow rue (**Thalictrum venulosum**) and fireweed. These species were not observed at the sample plot examined in the present study. Plate 17 shows vegetation within the sample plot.

---

[4] Because of the sample size (n=1) further sampling is necessary to define what species would be characteristic of the grassland association. Given the findings of other researchers (Wilkinson and Johnson, 1983; Moss, 1952), the abovementioned species appear to be important species within edaphic grassland communities on slopes.

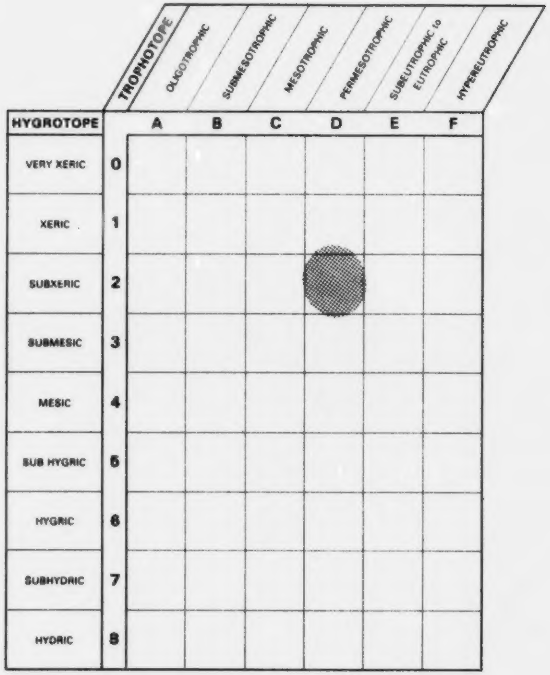

TROPHOTOPE
OLIGOTROPHIC
SUBMESOTROPHIC
MESOTROPHIC
PERMESOTROPHIC
SUBEUTROPHIC to EUTROPHIC
HYPEREUTROPHIC
HYGROTOPE
A
B
C
D
E
F
VERY XERIC
0
XERIC
1
SUBXERIC
2
SUBMESIC
3
MESIC
4
SUB HYGRIC
5
HYGRIC
6
SUBHYDRIC
7
HYDRIC
8

Fig. 3.17. Edatopic grid - grassland association

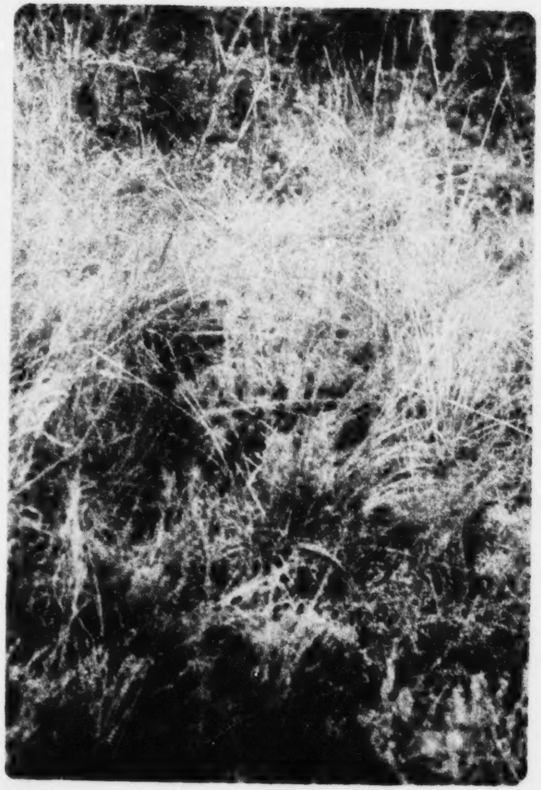


Plate 17. The grassland association occurs to a very limited extent on steep south-facing slopes along the Meikle River. Pasture sage, needle grass and wheat grass are typical.

4. PLANT SUCCESSION

This section presents a successional framework for the Keg River study area within which the relationships of different plant associations through time can be expressed. Because these relationships have been derived entirely through indirect means (i.e. inferences made from various data collected for the associations), it should be stressed that this framework is somewhat tentative.

Ideally, successional patterns should be studied throughout the developmental stages of various communities following disturbance. From a practical standpoint, however, resource management decisions often cannot wait for the collection and analysis of data over many years, and successional schemes such as those proposed below might be more useful over the short term. In the following discussion, a brief overview of successional theory is followed by a largely diagrammatic presentation of successional schemes for dryland and wetland communities. The subdivision into dryland and wetland areas was made because the factors affecting succession in wetland areas are somewhat different from those of dryland areas.

4.1 Background

The process of plant community development, which involves changes in species structure and community processes with time, and which results from modification of the physical environment by the community, is termed succession (Daubenmire, 1968; Mueller-Dombois and

Ellenberg, 1974; Odum, 1971). These authors distinguish two main types of succession, primary and secondary.

Primary succession occurs on areas which have not been previously occupied by plants, such as bare rock substrates and recently deglaciated areas. Secondary succession occurs on areas which have previously been vegetated and on which soils have developed through plant and microbial action. In the Keg River area, plant community development along primary successional pathways might occur along stream channels where flooding and ice abrasion expose areas of mineral soil. Overall, however, secondary successional processes are unquestionably the more important determinants of both dryland and wetland community development in the study area.

Succession may be viewed as a function of climate, organisms, relief and parent material all acting through time (Jenny 1961; Major 1951). Both climatic (fire) and edaphic factors are important agents affecting community development in the Keg River area through their influence on site conditions. The pre-existing vegetation of a disturbed site and the vegetation adjacent to disturbed areas also determine the kind and rate of succession.

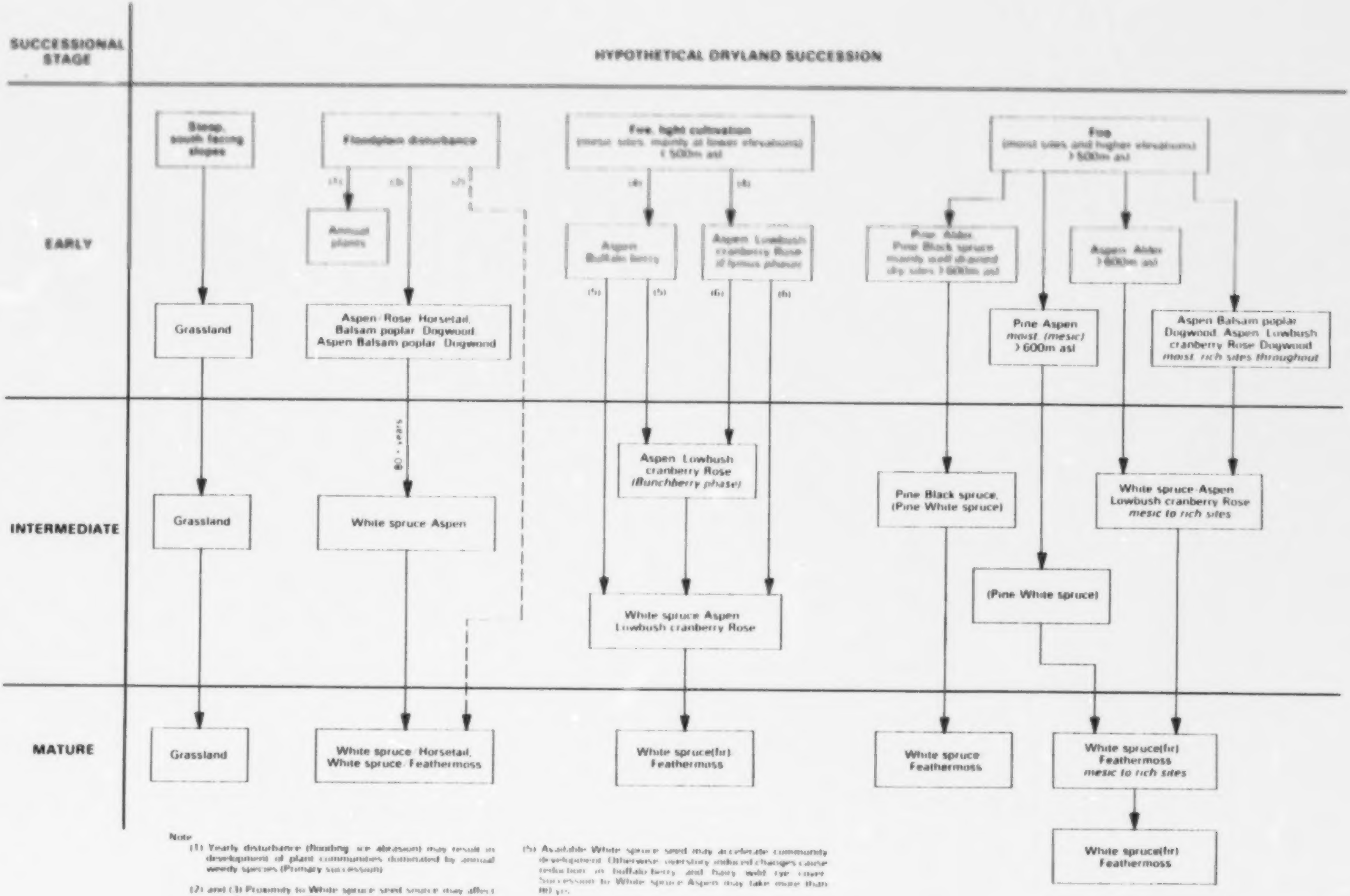
4.2 Dryland Succession

Fire, cultivation, and to a minor degree flooding and ice abrasion along stream channels are the main agents responsible for initiating succession on uplands in the Keg River area. To date, petroleum exploration and development, gravel mining, road construction and other disturbances are relatively unimportant. As mentioned in the background discussion, both primary and secondary successions may occur. Figure 4.1 and the accompanying legend presents a framework for dryland succession.

4.3 Wetland Succession

In contrast to dryland successional patterns where the factors affecting vegetation operate cyclically over relatively short time periods (100-250 years), wetland succession appears to be a slower process dependent upon organic matter deposition. The amount of organic matter accumulation has been correlated with the successional stage of wetland development. In general terms, relatively nutrient-rich and floristically diverse fens precede bogs, which are both nutritionally and floristically impoverished (Gorham, 1957 in Daubenmire, 1968, p. 149). Moss (1953b) and Kocaoglu and Bennett (1983) view boreal wetland succession in a similar way, and regard black spruce/labrador tea/moss bog or poor fen as an edaphic climax, with willow and sedge fens as earlier stages. This sequence appears to be valid for the Keg River study area, and is adopted in Figure 4.2 (right-hand side). Development of balsam poplar or white spruce forests might also occur where seepage water and resultant moist, rich mineral soils permit the development of lush diverse seepage willow communities (left side of Figure 4.2). A shorter period of time may be involved for this succession.

Moss (1953b) suggests that the rate of wetland community succession may be affected by periodic water fluctuation. It is also possible that nutrient inputs from surrounding agricultural lands, changes in water quality following fires in upland areas, changes induced by burning of the wetland areas, and edaphic factors (proximity of mineral soil to fen surface, stagnation zones produced by topography [Glaser, 1983]) might have an effect on wetland development.


SUCCESSIONAL STAGE
HYPOTHETICAL DRYLAND SUCCESSION
EARLY
INTERMEDIATE
MATURE
Steep, south facing slopes
Floodplain disturbance
(1)
(2)
(3)
Annual plants
Fire, light cultivation (mesic sites, mainly at lower elevations) (500m asl
(4)
(4)
Aspen Buffalo berry
Aspen Lowbush cranberry Rose (Lyonia phase)
(5)
(5)
(6)
(6)
Fire (moist sites and higher elevations)) 500m asl
Pine Alder Pine Black spruce mainly well drained dry sites) 600m asl
Aspen Alder) 600m asl
Grassland
Aspen/Rose Horsetail, Balsam poplar Dogwood Aspen Balsam poplar Dogwood
Pine Aspen moist (mesic)) 600m asl
Aspen Balsam poplar Dogwood Aspen Lowbush cranberry Rose Dogwood moist, rich sites throughout
80 + years
Grassland
White spruce Aspen
Aspen Lowbush cranberry Rose (Bunchberry phase)
Pine Black spruce, (Pine White spruce)
White spruce Aspen Lowbush cranberry Rose mesic to rich sites
(Pine White spruce)
White spruce Aspen Lowbush cranberry Rose
Grassland
White spruce/Horsetail, White spruce/Feathermoss
White spruce(fir) Feathermoss
White spruce Feathermoss
White spruce(fir) Feathermoss mesic to rich sites
White spruce(fir) Feathermoss

Note

(1) Yearly disturbance (flooding, ice abrasion) may result in development of plant communities dominated by annual weedy species (Primary succession).

(2) and (3) Proximity to White spruce seed source may affect rate of succession. White spruce regeneration is probably slow in Aspen Rose Horsetail Balsam poplar Dogwood and Aspen Balsam poplar Dogwood communities.

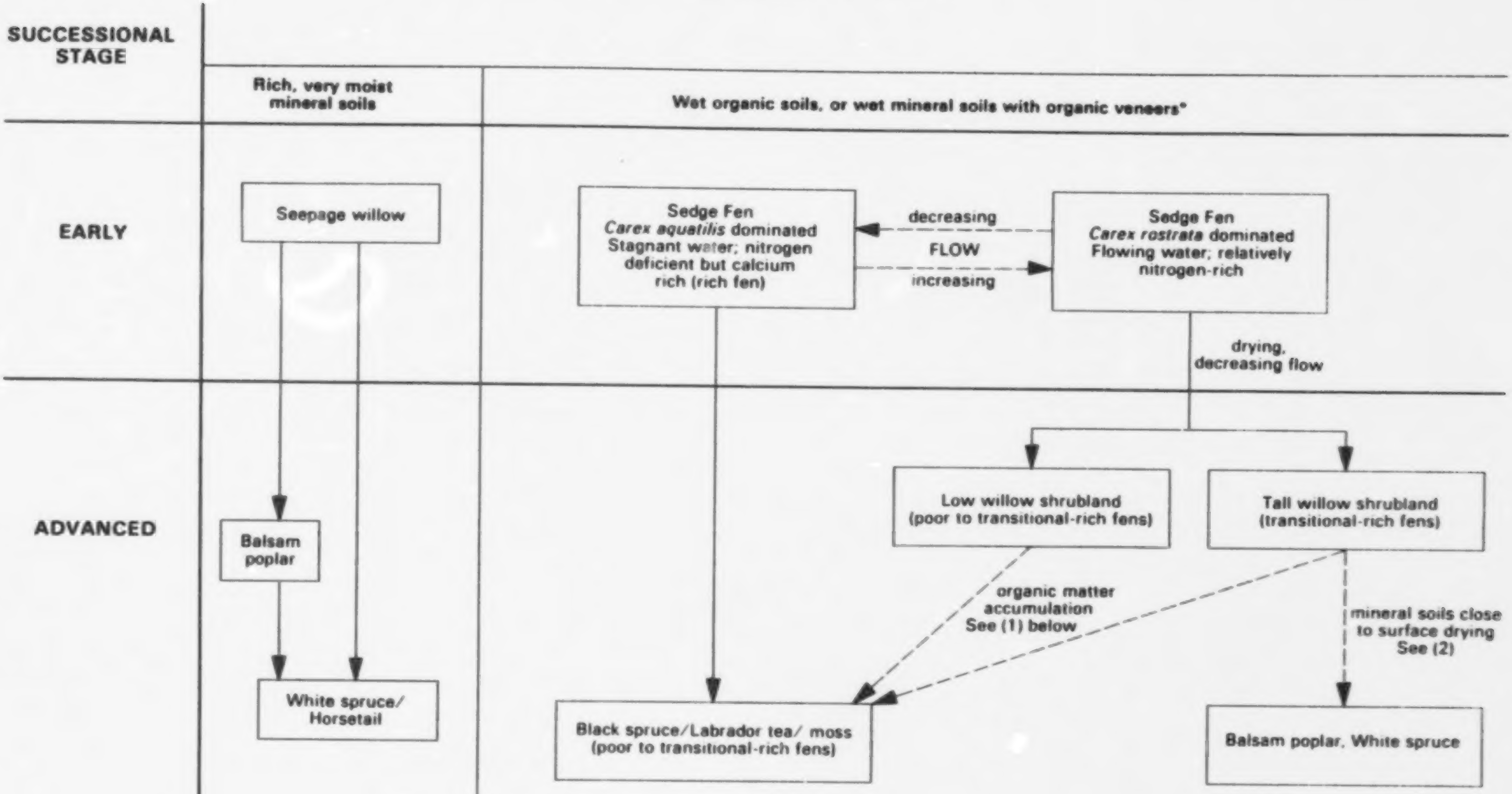
(4) Community development appears to be somewhat dependent on site and stocking density (see association descriptions).

(5) Available White spruce seed may accelerate community development. Otherwise overstory induced changes cause reduction in buffalo berry and hairy wild rye cover. Succession to White spruce Aspen may take more than 80 yrs.

(6) As for (5) but succession to White spruce Aspen may be more rapid.

Figure 4.1 HYPOTHETICAL DRYLAND SUCCESSION: KEG RIVER AREA

HYPOTHETICAL WETLAND SUCCESSION


SUCCESSIONAL STAGE
Rich, very moist mineral soils
Wet organic soils, or wet mineral soils with organic veneers*
EARLY
ADVANCED
Seepage willow
Balsam poplar
White spruce/ Horsetail
Sedge Fen
Carex aquatilis dominated
Stagnant water; nitrogen deficient but calcium rich (rich fen)
decreasing
FLOW
increasing
Sedge Fen
Carex rostrata dominated
Flowing water; relatively nitrogen-rich
drying, decreasing flow
Low willow shrubland (poor to transitional-rich fens)
Tall willow shrubland (transitional-rich fens)
organic matter accumulation See (1) below
mineral soils close to surface drying See (2)
Black spruce/Labrador tea/ moss (poor to transitional-rich fens)
Balsam poplar, White spruce

Note:

(1) Low willow shrublands commonly have black spruce in the low shrub layer, which may indicate affinity to the Black spruce/Labrador tea/moss stage. With sufficient time, both low and tall willow shrublands may develop to the Black spruce stage. Dotted lines indicate uncertainty as to time required and complexity of successional pathway.

(2) Balsam poplar is associated with some tall willow shrublands, suggesting that over time balsam poplar may attain dominance. Spruce communities may subsequently develop.

* D.H. Vitt, University of Alberta Dept. of Botany is gratefully acknowledged for input to this framework.

Figure 4.2 HYPOTHETICAL WETLAND SUCCESSION: KEG RIVER AREA

5. PLANT ASSOCIATIONS AND SITE PRODUCTIVITY

5.1 Introduction

Plant associations represent a synthesis of information about vegetation and associated environmental conditions. To the resource manager, this information can be of value in assessing land use suitability, particularly if a common basis for comparing lands supporting different plant communities can be used. Various quantitative measures of site productivity (the ability of a site to produce trees, forage, etc.) have long been employed by foresters and biologists to facilitate such comparisons.

In the Keg River study, both tree and forage productivity data were collected at a number of sites throughout the area. These data were subsequently grouped by plant association, on the assumption that differences in the physical environment reflected by each association (especially moisture and nutrient status) would be similarly indicated by differences in productivity. To test this assumption, various computer-assisted statistical comparisons of the data were made, with plant associations as the independent variables. Data collection and analysis methods are discussed under Methods (Section 2 of this volume, Section 3 of Volume I).

5.2 Data Used in Comparisons

Productivity data include the following:

1. Forestry Data

    (a) Site index (height in m @ 50 yr reference age) for dominant tree species appropriate to each association. To tabulate productivity comparisons, it is desirable to rank all forested associations relative to each other on a common site index base. Because many of the forested associations contain aspen as a dominant or codominant species, and because aspen associations cover the largest area, aspen site index was chosen as the basis for comparison. A synthesis of forest inventory data for pine, aspen, black spruce and white spruce prepared by the Alberta Forest Service[5] was used to adjust the species accordingly. Table 5.1 below shows site index classes for each species.

Table 5.1

PHASE 3 SITE INDEX CLASSES

Species	Phase 3 Site Class	Range of Site Index
Pine	Good (G)	>16.0
	Medium (M)	>12.0 and ≤16.0
	Fair (F)	≤12.0
White Spruce	(G)	>14.5
	(M)	>10.5 and ≤14.5
	(F)	≤10.5
Black Spruce	(G)	>9
	(M)	>6 and ≤9
	(F)	≤6
Aspen	(G)	>17.0
	(M)	>14.0 and ≤17.0
	(F)	≤14.0

For: Engelmann spruce use white spruce.
Balsam fir use white spruce.
Larch use black spruce.
Balsam poplar use aspen.

The site index values shown are for a reference age of 50 years measured at breast height.

Based on the site indices presented above and assuming a linear relationship between site index for aspen and the other species, an aspen equivalent site index can be derived from other site indices as follows:

---

[5] V. LeMay, Forest Measurement Section, Alberta Forest Service memorandum (file reference T/M F2.31 Feb. 22, 1985)

Site index (white spruce) + 2.5 = site index (aspen)
Site index (lodgepole pine) + 1.0 = site index (aspen)
Site index (balsam poplar) = site index (aspen)

Aspen equivalent site indices are recorded in the appropriate tables (following) and the association is assigned a productivity rating according to its ranking against those associations containing aspen.

b. Mean annual increment (MAI), based on total volume (m^3/ha) divided by total age. This measure allows productivity comparisons among associations regardless of species. Because stand influences and particularly stocking density can influence MAI and site index values, both should be used with caution[6].

2. Forage Data

   a. Air-dry grass and graminoid productivity (kg/ha).

   b. Air-dry total forb productivity (kg/ha)

   c. Air-dry palatable browse productivity (0.5 m-2.5 m above ground, current year growth, kg/ha)[7]

5.3 Results of Analysis

Multiple range comparisons and one-way analyses of variance revealed, at best, weak correlations between productivity and plant associations. There are several possible reasons for this:

1. Environmental differences between plant associations may be sufficiently large to produce differences in species composition but not in productivity;
2. Productivity is dependent not only on physical site factors but also on inherent characteristics of the stand such as stocking density and successional status; and

---

[6] Complete mensuration data are provided for each association in Appendix 1 (mensuration tables).

[7] Figures and tables summarizing productivity data for each of these measures by plant association are given below.

3. Unequal and often small samples, combined with the variability that can be expected in natural communities, result in wide variations about the mean and statistically insignificant comparisons.

These statistical analyses did, however, indicate a weak trend toward clustering of the associations into groups having different productivity. Subsequent to this observation, bar charts for various productivity data were prepared, showing both the mean for each asssociation and the range at confidence levels of 70 and 95 per cent about each mean. Using these charts as a visual aid, divisions into productivity groups were made using "statistical" criteria. Divisions were determined by looking for both the largest differences in means along a gradient from highest to lowest mean, and places where overlap of ranges was the smallest.

The following pages present bar charts and tables showing plant associations grouped into productivity classes based on the above criteria. It must be emphasized that since these classes are based on trends within data collected in the Keg River area, they are specific to the study area and are not necessarily equal to regional or provincial classes.

5.4 Summary of Analyses

A summary of comparative productivity ratings, along with comments pertaining to site related factors, is presented below for each individual association. These are abstracted from the tables and figures.

Figure 5.1 SITE INDEX - ASPEN

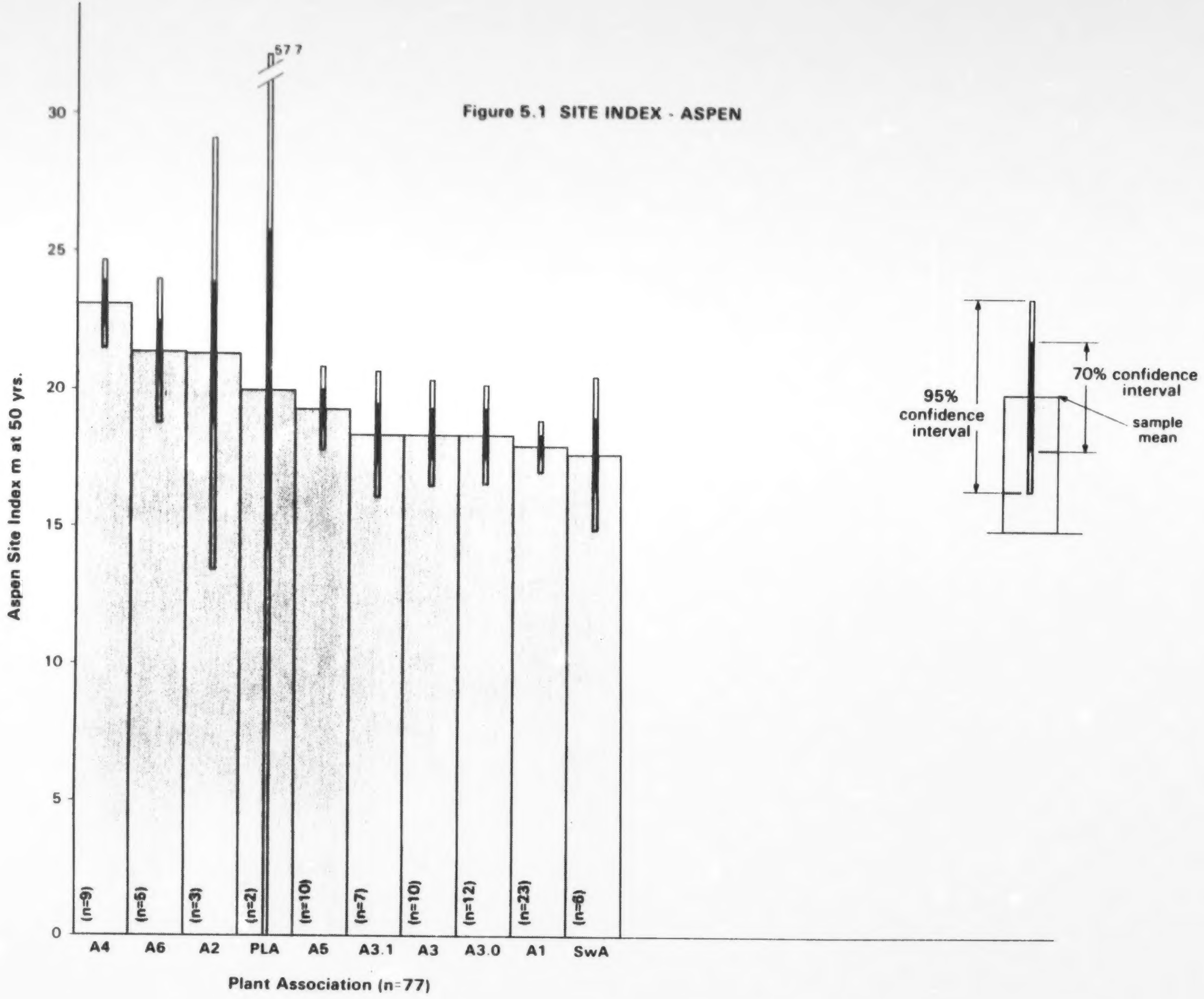


Table 5.2

Data Summary: Site Index (Aspen) m @ 50 yr for Stands with Aspen Component (n = 77)

Association[1]		$\overline{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval	Range (70% Confidence Interval)	Productivity Class
A4: Aspen/Low-bush cranberry-Dogwood	n = 9	23.1	2.1	19	25	21.5-24.7	22.3-23.9	High
A6: Aspen-Balsam poplar/Dogwood	n = 5	21.4	2.1	19	24	18.8-24.0	20.3-22.5	
A2: Aspen/Rose/Horsetail	n = 3	21.3	3.2	19	25	13.4-29.2	18.7-23.9	
PLA: Pine-Aspen	n = 2	20.0	4.2	17	23	0 -57.7	14.2-25.8	Moderate (high)
A5: Aspen-Alder	n =10	19.3	2.1	15	22	17.8-20.8	18.6-20.0	
A3.1: Aspen/Low-bush cranberry-Rose/ Bunchberry phase	n = 7	18.4	2.5	15	22	16.1-20.7	17.3-19.5	Moderate
A3: Aspen/Low-bush cranberry-Rose (A3.0 + A3.1)	n = 10	18.4	2.7	12	23	16.5-20.3	17.5-19.3	
A3.0: Aspen/Low-bush cranberry-Rose/ Wild rye phase	n = 12	18.4	2.8	12	23	16.6-20.2	17.5-19.3	
A1: Aspen/Buffaloberry	n = 23	18.0	2.0	14	22	17.0-18.9	17.6-18.4	
SwA: White spruce-Aspen	n = 6	17.7	2.7	14	22	14.9-20.5	16.4-19.0	

[1] Alphanumeric codes in left hand column (e.g. A1) correspond to those on the bar diagram for aspen site index.

Table 5.3

Data Summary: Site Index (Lodgepole Pine) m @ 50 yr for Stands with Pine Component n = 10

Association	$\overline{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval)	Range (70% Confidence Interval)	Aspen Equivalent	Productivity Class
PLA Pine-Aspen n = 2	21.5	0.7	21	22	15.2-27.8	20.5-22.5	22.5	M (H) to H
PLSb Pine-Black spruce/Labrador tea/Moss n = 4	16.2	1.0	15	17	14.6-17.8	15.6-16.8	17.2	M
PL1 Pine/Alder n = 3	16.7	1.2	16	18	13.7-19.7	15.7-17.7	17.7	M

Table 5.4

Data Summary: Site Index (Balsam Poplar) m @ 50 yr for Stands with Balsam Poplar Component n = 15

Association	$\overline{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval)	(70% Confidence Interval)	Aspen Equivalent	Productivity Class
A6 Aspen-Balsam poplar/Dogwood n = 5	21.0	3.7	16	24	16.4-25.6	19.0-23.0	21.0	H
Pb1 Balsam poplar/Dogwood n = 6	20.2	2.3	23	23	17.8-22.6	19.1-21.3	20.2	M (H)

Table 5.5

Data Summary: Site Index (White Spruce) m @ 50 yr for Stands with White Spruce Component n = 32

	Association		$\bar{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval)	Range (70% Confidence Interval)	Aspen Equivalent	Productivity Class
SwA	White spruce-Aspen	n = 9	16.2	2.0	14	19	14.7-17.7	15.5-16.9	18.7	M
Sw	White spruce (all sites)	n =14	15.3	2.9	10	19	13.6-17.0	14.5-16.1	17.8	M-H
	White spruce (glaciofluvial and fluvial	n = 5	17	2.7	14	19	13.6-20.3	15.6-18.4	19.5	M (H)
	White spruce (other parent materials	n = 9	14	2.6	10	18	12 -16	13 -14.9	16.5	M

Table 5.6

Data Summary: Site Index (Black Spruce) m @ 50 yr for Stands with Black Spruce Component n = 4

	Association		$\bar{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval)	Range (70% confidence Interval)	Aspen Equivalent	Productivity Class
Sb	Black spruce	n = 4	8.8	2.2	6.0	11.0	5.3-12.3	7.4-10.2		L

Figure 5.2 TOTAL STAND M.A.I.(m³/ha/yr.)

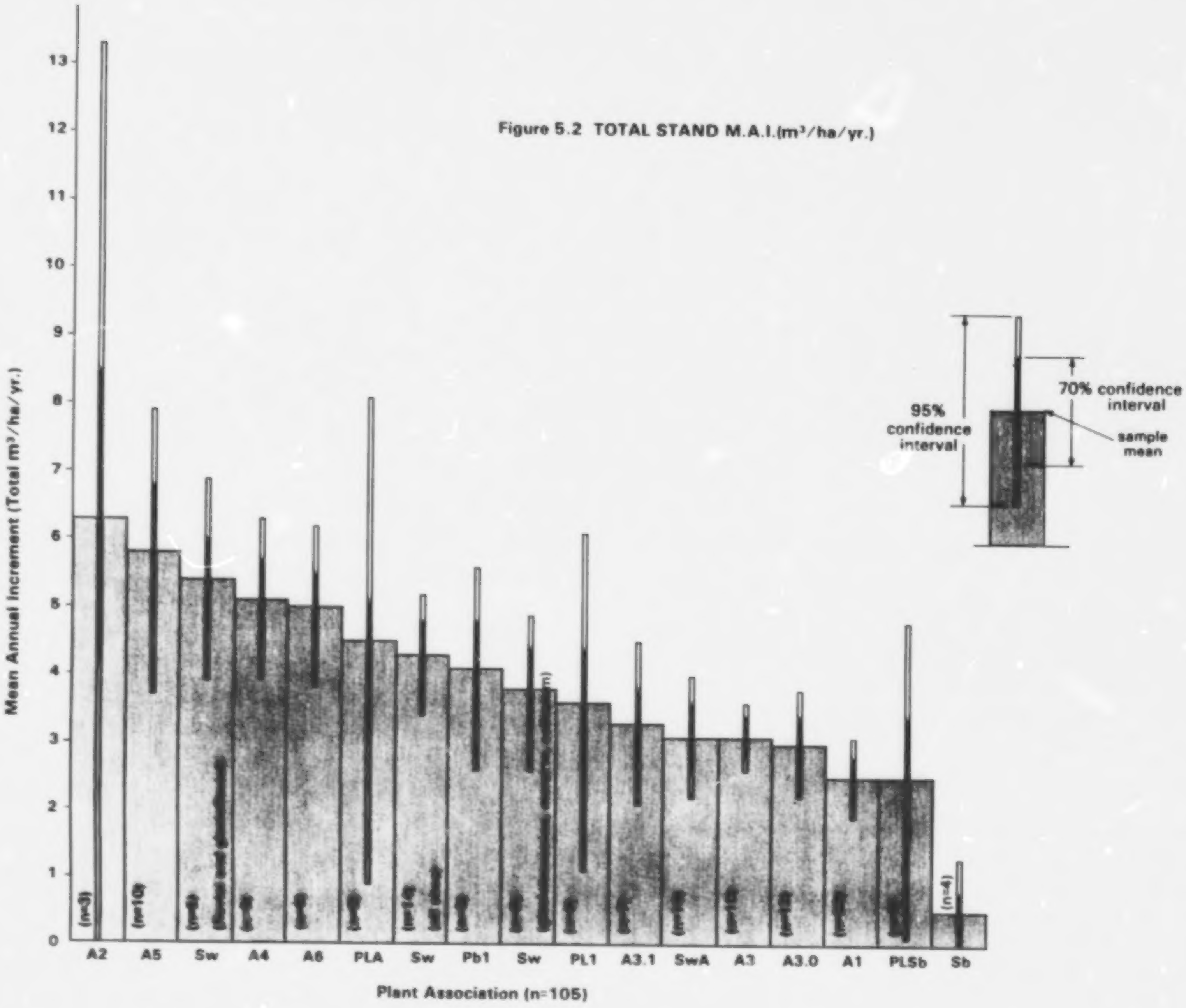


Table 5.7

Data Summary: Total MAI (m^3/ha/yr) of Sampled Stands with Mensuration Data (MAI = Mean Annual Increment = Total Volume ÷ Age)

	Association[1]		$\bar{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval	Range (70% Confidence Interval)	Productivity Class
A2	Aspen/Rose/Horsetail	n = 3	6.3	2.8	4.3	9.5	0 -13.3	4.1-8.5	High
A5	Aspen/Alder	n =10	5.8	3.0	2.5	10.7	3.7- 7.9	4.8-6.8	
Sw	White Spruce (fluvial and glaciofluvial)	n = 5	5.4	1.2	4.0	7.3	3.9- 6.9	4.8-6.0	
A4	Aspen/Low-bush cranberry-Rose-Dogwood	n = 9	5.1	1.5	3.3	8.0	3.9-6.3	4.5-5.7	
A6	Aspen-Balsam poplar/Dogwood	n = 6	5.0	1.1	3.9	6.5	3.8-6.2	4.5-5.5	
PLA	Pine-Aspen	n = 2	4.5	0.4	4.2	4.7	0.9-8.1	3.9-5.1	Moderate (high)
Sw	White Spruce (all sites)	n =14	4.3	1.6	2.5	7.7	3.4-5.2	3.8-4.8	
Pbl	Balsam poplar/Dogwood	n = 6	4.1	1.4	2.6	6.4	2.6-5.6	3.4-4.8	
Sw	White Spruce (glaciolacustrine, moraine, colluvium)	n = 9	3.8	1.5	2.5	7.7	2.6-4.9	3.2-4.4	
PL1	Pine/Alder	n = 3	3.6	1.0	3.0	4.7	1.1-6.1	2.8-4.4	
A3.1	Aspen/Lowbush cranberry-Rose/Bunchberry phase	n = 7	3.3	1.2	1.3	5.1	2.1-4.5	2.8-3.8	Moderate
SwA	White spruce-Aspen	n =10	3.1	1.3	1.1	5.6	2.2-4.0	2.6-3.6	
A3	Aspen/Low-bush cranberry-Rose phases (combined)	n =19	3.1	1.1	1.3	5.1	2.6-3.6	2.8-3.4	
A3.0	Aspen/Low-bush cranberry-Rose/Wild rye phase	n =12	3.0	1.3	1.3	4.3	2.2-3.8	2.6-3.4	
A1	Aspen/Buffalo-berry	n =23	2.5	1.4	0.4	5.9	1.9-3.1	2.2-2.8	
PLSb	Pine-Black spruce/Labrador tea/Moss	n = 4	2.5	1.5	1.2	4.2	0.1-4.8	1.6-3.4	
Sb	Black spruce/Labrador tea/Moss	n = 4	0.5	0.5	0.1	1.3	0 -1.3	0.2-0.8	Low

[1] Alphanumeric codes in left hand column (e.g. A1) correspond to those on the bar diagram for MAI.

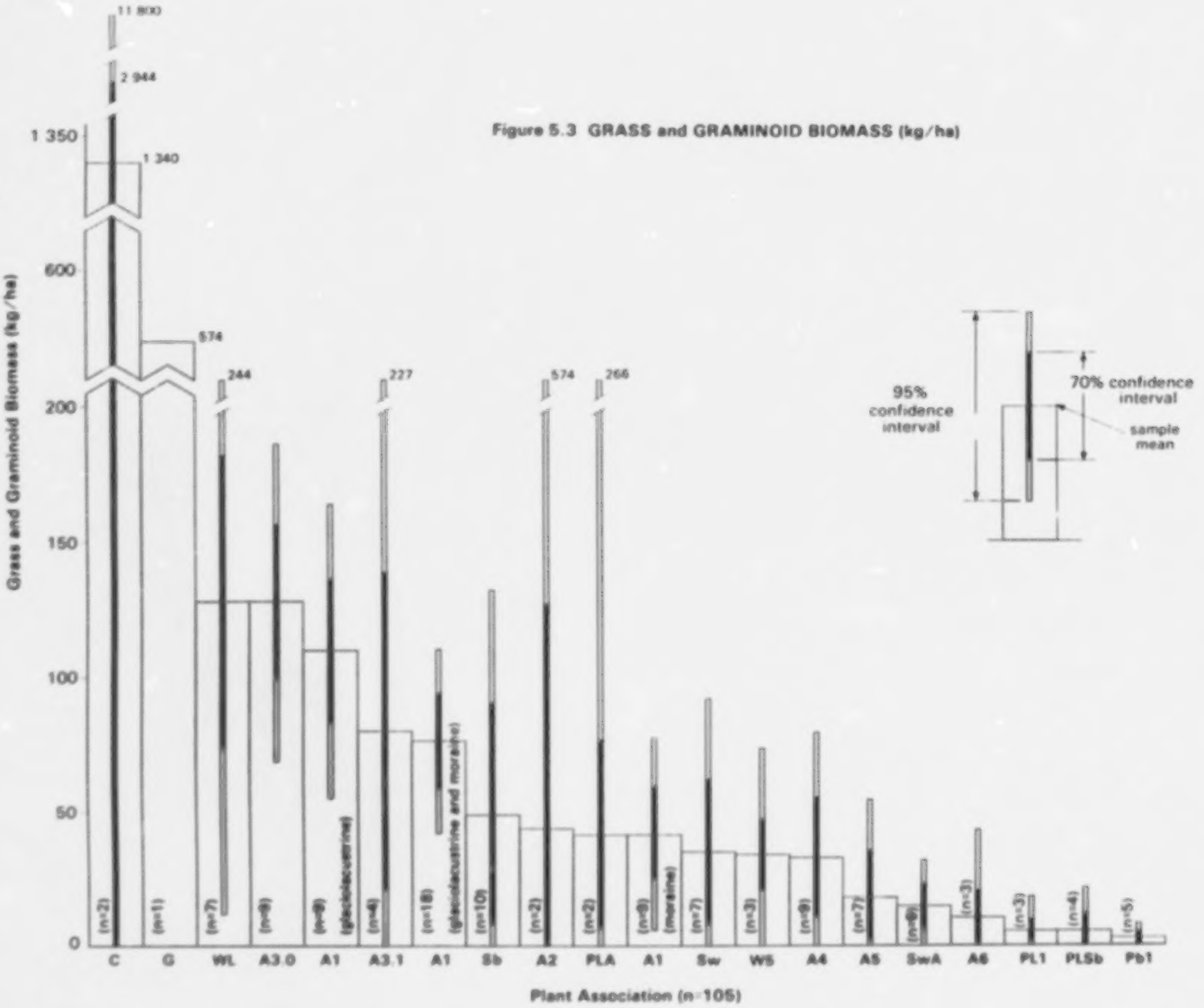


Figure 5.3 GRASS and GRAMINOID BIOMASS (kg/ha)

Table 5.8

Data Summary: Grass and Graminoid Biomass (kg/ha) of Sampled Sites Within 17 Associations n = 105

Association[1]			$\bar{X}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval	Range (70% Confidence Interval)	Productivity Class
C	Sedge meadow	n = 2	1340	1156	522	2157	0-11800	0-2944	High
G	Grassland	n = 1	574		574	574			
WL	Willow shrubland-Depressional and level terrain	n = 7	128	125	12	328	12 - 244	74- 182	Moderate
A3.0	Aspen/Low-bush cranberry-Rose/ Wild rye phase	n = 9	128	76	30	260	69 - 186	100- 156	
A1	Aspen/Buffalo-berry on glacio-lacustrine	n = 9	110	71	0	216	55 - 164	83- 136	
A3.1	Aspen/Low-bush cranberry-Rose/ Bunchberry phase	n = 4	80	93	0	202	0 - 227	22- 138	
A1	Aspen/Buffalo-berry on glacio-lacustrine and moraine	n =18	76	69	0	216	42 - 110	58- 93	
Sb	Black spruce/Labrador tea/Moss	n =10	49	117	0	378	0 - 132	8- 90	Low to very low
A2	Aspen/Rose/Horsetail	n = 2	44	59	2	86	0 - 574	0- 126	
PLA	Pine-Aspen	n = 2	42	25	24	60	0 - 266	7- 76	
A1	Aspen/Buffalo-berry on moraine	n = 9	42	46	0	144	6 - 77	25- 59	
Sw	White spruce/Feathermoss	n = 7	35	62	0	170	0 - 92	8- 62	
W5	Seepage willow	n = 3	34	16	23	52	0 - 73	21- 47	
A4	Aspen/Low-bush cranberry-Rose-Dogwood	n = 9	33	58	0	178	0 - 78	11- 55	
A5	Aspen/Alder	n = 7	18	39	0	106	0 - 54	2- 35	
SwA	White spruce-Aspen/Low-bush cranberry-Rose	n = 9	15	22	0	54	0 - 32	7- 23	
A6	Aspen-Balsam poplar/Dogwood	n = 3	11	13	0	25	0 - 43	1- 21	
PL1	Pine/Alder	n = 3	6	5	1	9	0 - 18	2- 10	
PLSb	Pine-Black spruce	n = 4	6	10	0	21	0 - 22	0- 12	
Pbl	Balsam poplar	n = 5	3	4	0	9	0 - 8	1- 5	

[1] Alphanumeric codes in left hand column (e.g. A1) correspond to those on the bar diagram for grass and graminoid biomass.

Figure 5.4 FORB BIOMASS (kg/ha)

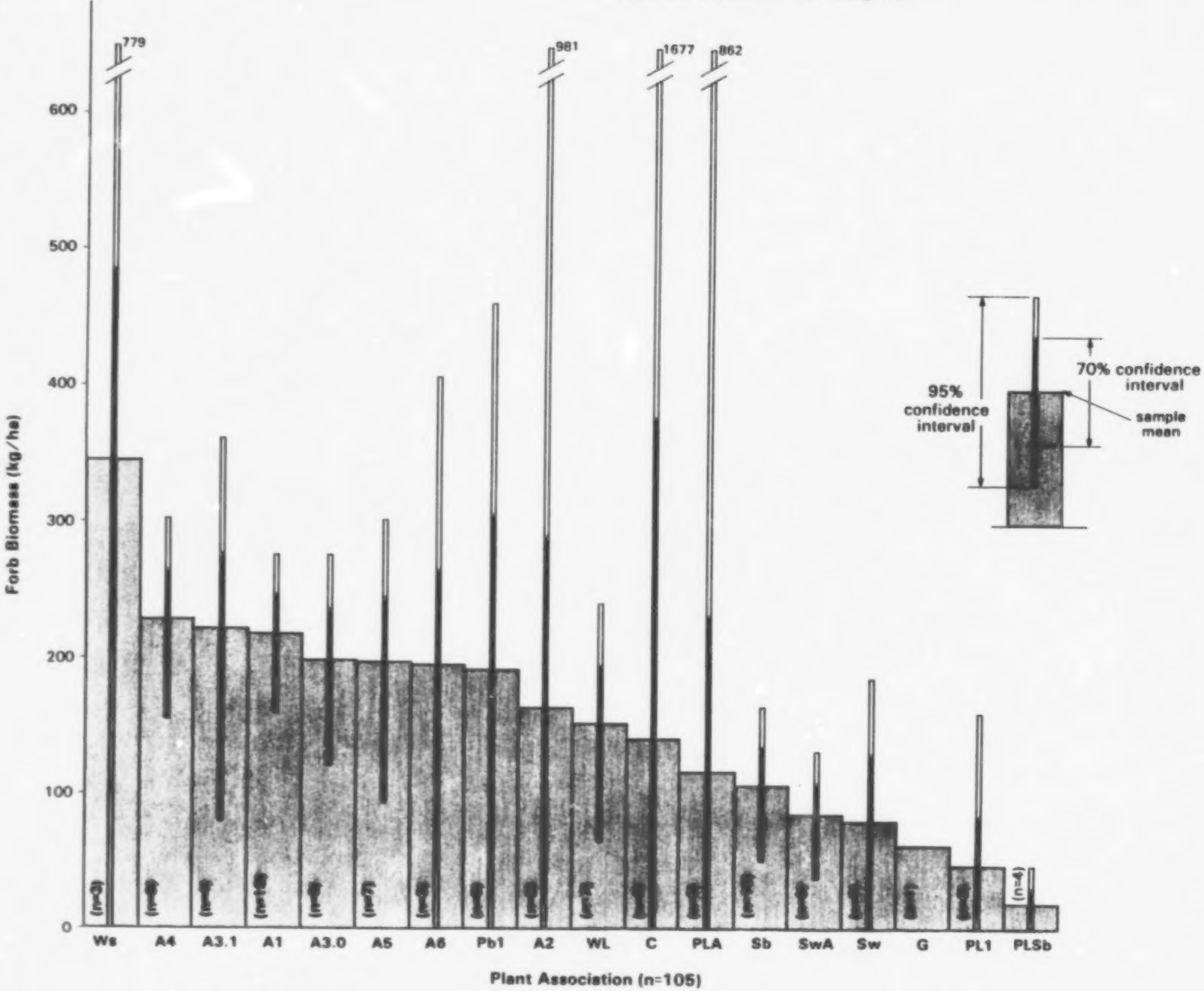


Table 5.9

Data Summary: Forb Biomass (kg/ha) of Sampled Stands Within 17 Associations n = 105

Association[1]			$\bar{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval	Range (70% Confidence Interval)	Productivity Class
W5	Seepage willow	n = 3	345	175	216	544	0-779	205-485	High
A4	Aspen/Low-bush cranberry-Rose-Dogwood	n = 9	229	96	76	376	155-302	193-264	Moderate to high
A3.1	Aspen/Low-bush cranberry-Rose/Bunchberry phase	n = 4	221	88	154	338	80-361	166-276	
A1	Aspen/Buffalo-berry	n =18	218	117	39	484	188-247	159-276	
A3.0	Aspen/Low-bush cranberry-Rose Wild rye phase	n = 9	199	101	81	398	121-276	161-236	
A5	Aspen/Alder	n = 7	197	113	80	400	93-302	149-245	
A6	Aspen-Balsam poplar/Dogwood	n = 3	196	85	104	270	0-407	128-264	
Pb1	Balsam poplar/Dogwood	n = 5	192	217	6	529	0-461	77-307	
A2	Aspen/Rose/Horsetail	n = 2	164	91	99	228	0-981*	38-290*	*samples too small to indicate trend Moderate to low
WL	Willow shrubland-depressional and level terrain	n = 7	153	95	18	241	65-241	112-194	
C	Sedge fen	n = 2	141	171	20	262	0-1677*	0-378*	
PLA	Pine-Aspen	n = 2	117	83	58	176	0-862	2-232*	
Sb	Black spruce/Labrador tea/Moss	n =10	108	79	0	265	52-165	81-136	
SwA	White spruce-Aspen/Low-bush cranberry-Rose	n = 9	86	61	6	187	39-133	64-108	
Sw	White spruce/Moss	n = 7	81	114	0	313	0-186	32-130	
G	Grassland	n = 1	63	-	63	63	-*	-*	Low to very low forb productivity
PL1	Pine/Alder	n = 3	48	45	19	100	0-160	12- 84	
PLSb	Pine-Black spruce/Labrador tea/Moss	n = 4	20	18	0	38	0- 48	8- 31	

[1] Alphanumeric codes in left hand column (e.g. A1) correspond to those on the bar diagram for forb biomass.

Figure 5.5 PALATABLE BROWSE BIOMASS (kg/ha)

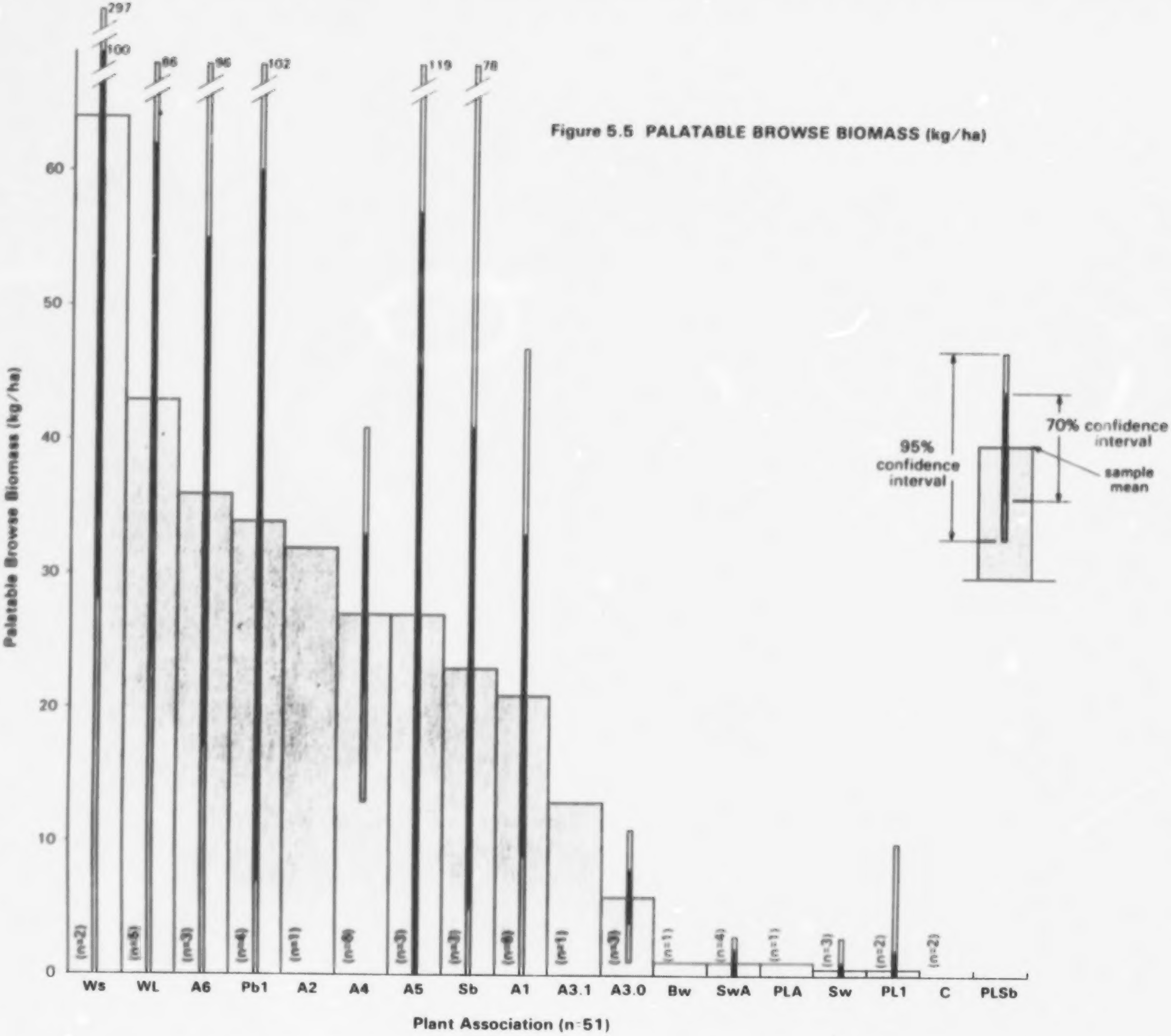


Table 5.10

Data Summary: Palatable Browse Biomass (kg/ha) for Sampled Stands Within 18 Associations n = 51
Current Annual Growth > 5 cm and Between 0.5-2.5 m

Association[1]			$\bar{x}$	Sx	Minimum Sample Value	Maximum Sample Value	Range (95% Confidence Interval	Range (70% Confidence Interval)	Productivity Class
W5	Seepage willow	n = 2	64	26	49	79	0-297	28-100	High
WL	Willow shrubland-depressional and level terrain	n = 5	43	35	1	87	0- 86	24- 62	Moderate
A6	Aspen-Balsam poplar/Dogwood	n = 3	36	24	10	58	0- 96	17- 55	
Pb1	Balsam poplar/Dogwood	n = 4	34	43	9	98	0-102	7- 60	
A2	Aspen/Rose/Horsetail	n = 1	32	--	32	32	---	---	
A4	Aspen/Low-bush cranberry-Rose-Dogwood	n = 6	27	13	13	46	13- 41	21- 33	
A5	Aspen/Alder	n = 3	27	37	3	70	0-119	0- 57	Low
Sb	Black spruce/Labrador tea/Moss	n = 3	23	22	0	45	0- 78	5- 41	
A1	Aspen/Buffalo-berry	n = 6	21	25	1	67	0- 47	9- 33	
A3.1	Aspen/Low-bush cranberry-Rose/* Bunchberry phase	n = 1	13	--	13	13	---	---	Very low
A3.0	Aspen/Low-bush cranberry-Rose/ Hairy wild rye phase	n = 3	6	2	1	10	1- 11	4- 7	
Bw	Paper birch community	n = 1	1	--	1	1	---	---	
SwA	White spruce-Aspen/Low-bush cranberry-Rose	n = 4	1	1	0	4	0- 3	0- 2	
PLA	Pine-Aspen	n = 1	1	--	1	1	---	---	
Sw	White spruce/Feathermoss	n = 3	0.5	1	0	2	0- 3	0- 1	
PL1	Pine/Alder	n = 2	0.5	1	0	1	0- 10	0- 2	
C	Sedge meadow	n = 2	0.0	0	0	0	0	0	
PLSb	Pine-Black spruce/Labrador tea/Moss								

* Two sites were sampled; however, one site was dropped from analysis because strip thinning may have encouraged greater than normal browse production.

[1] Alphanumeric codes in left hand column (e.g. A1) correspond to those on the bar diagram for browse biomass.

5.4.1 Deciduous Forest Associations

5.4.1.1 Aspen-Buffalo-berry Association. In terms of relative productivity ranking within the study area, total mean annual increment is moderately low as is site index. The prevalence of fine textured heavy soils which reduce aeration, root penetration and water infiltration may be partly responsible. Such conditions are reportedly unfavorable for good aspen growth (Wilkinson and Johnson 1983; Moss 1952). Relatively high magnesium concentrations, as indicated by the soil chemical analyses, might also affect tree growth.

Total forb biomass productivity is on average moderate to high. Grass and graminoid biomass varies with the parent material for this association; the average grass biomass for aspen/buffalo-berry stands on glaciolacustrine parent materials is over twice that of stands on moraine. Browse biomass productivity is judged to be low.

5.4.1.2 Aspen/Rose/Horsetail Association. Sites comprising this association are more productive for aspen than those of most other associations for aspen; productivity is ranked high for both MAI and aspen site index.

Biomass productivity of forbs and graminoids is ranked moderate to low and palatable browse productivity in the single stand sampled was relatively high. Because of the extremely small sample size and large variation about the mean, biomass productivity data should be used with caution.

5.4.1.3 Aspen/Low-bush cranberry-Rose Association

(1) Hairy wild rye phase. Stand productivity is ranked moderately low relative to other associations in the study area as is site index for aspen. These values might again be related to soil properties as discussed for the aspen/buffalo-berry association.

Biomass productivity of forbs and graminoids was judged to be moderate to high relative to other associations in the study area. Browse productivity was ranked very low, based on comparisons of small samples.

(2) Bunchberry phase. Stand productivity of the bunchberry phase is equivalent to that of the hairy wild rye phase. Gross and merchantable volumes are greater in the older bunchberry phase, however.

Biomass productivity for forbs, grasses and graminoids, and browse is ranked similar to that of the hairy wild rye phase (moderate, moderate and very low, respectively). It is worthy of note that thinning can produce dramatic increases in biomass productivity. At site 4KR055 (just south of Battle River tower) strip thinning for forest improvement produced a threefold increase in forb production, compared to other stands in this association that had not been thinned.

5.4.1.4 Aspen/Low-bush Cranberry-Rose-Red Osier Dogwood Association.

A favorable moisture and nutrient status for tree growth is indicated by both site index and mean annual increment values. Site index for aspen is the highest for any of the associations in the study area.

Average mean annual increment values place this association in a group judged to be highly productive relative to other associations. Forb and palatable browse biomass productivity are ranked moderate to high; grass and graminoid productivity is low.

5.4.1.5 Aspen/Alder Association. Stands within the aspen/alder association are ranked as moderately to highly productive for tree growth. Slightly higher precipitation in the Clear Hills Upland might contribute to the high average mean annual increment and moderate site index for aspen.

Total forb biomass productivity is ranked as moderate relative to other associations. In general, grass productivity is very low, although sites on glaciofluvial parent materials may support good hairy wild rye growth. Palatable browse productivity is rated as low to very low.

5.4.1.6 Aspen-Balsam Poplar/Red Osier Dogwood Association. Favorable moisture and nutrient status for tree growth is indicated by high site index for trembling aspen and balsam poplar, and by high mean annual increment values. Forb and palatable browse biomass productivity are ranked moderate, and grass and graminoid productivity is judged to be very low.

5.4.1.7 Balsam Poplar/Red Osier Dogwood Association. Site index for balsam poplar is rated as moderately high and mean annual increment is ranked moderate to high relative to other forest associations.

Average forb and palatable browse productivity are both rated as moderate, but there is considerable variation depending on shrub and forb abundance within an individual community. Grass and graminoid productivity is the lowest of any association in the study area.

5.4.2 Coniferous Forest Associations

5.4.2.1 White Spruce-Aspen/Low-bush Cranberry-Rose Association. Overall, stand productivity (mean annual increment) is ranked as moderate. Sites on morainal parent materials might be slightly better for tree growth than those on glaciolacustrine material, as there is a weak trend toward higher mean annual increment values on till deposits. Site index for aspen is ranked moderate relative to other associations. Site index for white spruce is similarly ranked as moderate based on "aspen equivalent" site index (Section 5.2 of this volume discusses "aspen equivalent" index calculations). Forb, grass and graminoid, and palatable browse biomass productivity are all ranked low to very low.

5.4.2.2 White Spruce/Feathermoss Association. Although there are no evident differences in the vegetation of white spruce/feathermoss stands on glaciofluvial/fluvial parent materials and those occurring on other types of parent material, there do seem to be differences in tree productivity. Overall, the white spruce/feathermoss association is judged to be moderately highly productive relative to other associations with respect to mean annual increment, but sites on glaciofluvial and fluvial materials are highly productive.

Productivity as measured by site index is judged to be moderately high on glaciofluvial and fluvial parent materials and moderate on other parent materials, based on an "aspen equivalent" site index calculation applied to white spruce. Forb, grass and palatable browse biomass productivity are all ranked low to very low relative to other associations.

5.4.2.3 Lodgepole Pine/Alder Association. The association is rated as moderately productive relative to other associations with respect to mean annual increment. Productivity as measured by site index is judged to be moderate, based on an aspen equivalent site index calculation applied to lodgepole pine. Forb, grass and palatable browse biomass productivity are all ranked very low.

5.4.2.4 Lodgepole Pine-Black Spruce/Labrador Tea/Feathermoss Association. Relative to other associations in the study area, this association is ranked as having low productivity with respect to mean annual increment. Productivity as measured by site index is judged to be moderate relative to other associations, based on an "aspen equivalent" site index calculation applied to lodgepole pine. Forb, palatable browse and grass/graminoid productivity are all rated as very low.

5.4.2.5 Lodgepole Pine-Aspen Association. Based upon very limited sampling, stand productivity as defined by mean annual increment is ranked moderately high relative to other associations including other pine associations. Site index for aspen is too variable among the two sampled plots to define a productivity rating. Site index for pine appears to be higher for this association than for the other two pine associations. Higher tree productivity in stands belonging to this association relative to stands in the lodgepole pine/alder or lodgepole pine-black spruce/feathermoss associations might be expected, given better soil moisture status that appears to be correlated with the pine-aspen association. Forb, grass and palatable browse biomass productivity is difficult to rank because of the sample size, but there is a weak trend toward higher forb and grass productivity than in the other pine associations.

5.4.3 Wetland Associations

5.4.3.1 Black Spruce/Labrador Tea/Moss Association. Tree productivity is very low for this association relative to others. Overall, biomass productivity is low to very low. Willows tend to become more common with improvement in nutrient status, however, and this is reflected by a very general trend to higher browse productivity on richer sites (refer to Section 3.3.1 for discussion of nutrient status).

5.4.3.2 Willow Shrubland Association - Depressional and Level Terrain. Forb, grass and graminoid, and palatable browse productivity in this association, taken as a whole, are all ranked as moderate. Within the association, however, forb productivity appears to be somewhat higher and grass and graminoid productivity somewhat lower in the tall shrub communities than in low shrub communities. Browse productivity is lower in tall shrub communities primarily because most of the browse is judged to be unavailable (more than 2.5 m above ground level).

5.4.3.3 Seepage Willow Association. Although no data relating tree productivity to site could be collected, it is probable that sites which are at present supporting this association could be potentially productive for commercial tree species, given site conditions. Both forb and palatable browse biomass productivity are ranked as very high relative to other associations in the study area, and grass productivity is judged to be low.

5.4.3.4 Sedge Fen Association. Biomass productivity is variable. However, grass and graminoid productivity far exceeds that of any other associations except the grassland association in the study area. Forb productivity cannot reliably be ranked relative to other associations due to wide variation in productivity and small sample size. It should be noted that water hemlock (**Cicuta maculata**), a highly toxic forb species, is likely to be associated with sedge fens and may consequently reduce the forage value of such areas considerably. Palatable browse productivity is ranked very low.

5.4.4 Grassland Association

Based on one sample, grass and graminoid productivity appears to be high relative to all associations except for the sedge fen association. Forb productivity is ranked low. Palatable browse productivity was not assessed.

6. RELATIONSHIP TO OTHER CLASSIFICATIONS

This section compares plant associations described for the Keg River area and vegetation types delineated by other studies in northern Alberta. It is hoped that this comparison will simplify the task of persons involved in land classification projects at the local scale or in refining province-wide (biogeoclimatic and ecoregion) classification systems.

Tables 6.1 through 6.4 summarize the relationship between the Keg River classification system and other systems for deciduous, coniferous, wetland and grassland vegetation. The Keg River area lies mostly within the Boreal Mixedwood Ecoregion as defined by Strong and Leggat (1981); because the comparisons made are meant to emphasize similarities between the Keg River study and others, only those studies which include this ecoregion are presented. The vegetation types (association and forage types) which are compared are considered to be similar in floristic composition and environmental conditions. Hatch marks in the tables indicate that there are no vegetation types comparable to those of Keg River in the row and column indicated.

Table 6.1

COMPARISON OF DECIDUOUS FOREST VEGETATION WITHIN THE BOREAL MIXEDWOOD ECOREGION

Keg River 1985 Plant Associations	Kocaoglu and Bennett 1983 East-Central Alberta Forage Types	Archibald 1985 (in preparation) Biogeoclimatic Classification	Bishoff 1981 Jean D'Or Prairie Forage Types	Bishoff (revised 1984) Frost Hills (Central Alberta)	Moss, 1953a Forest Associations - Northwest Alberta	Archibald et al 1984 Deep Basin (83L Map Sheet)
Aspen/Buffalo-berry	▨ (Buffaloberry very infrequent under aspen stands)	Populus tremuloides/ Shepherdia canadensis (Aspen/Buffalo-berry)	Aspen-Rose-Hairy Wild Rye Aspen-Willow	▨ (Buffalo-berry very infrequent under aspen stands)	Poplar association; Aspen poplar consociation	Trembling aspen/Low-bush cranberry/Dewberry association
Aspen/Rose/Horsetail	▨	▨	▨	▨	▨ (Most like Balsam poplar consociation)	▨
Aspen/Low-bush cranberry-Rose	Aspen/Cranberry/ Sarsaparilla	Populus tremuloides/ Viburnum edule (Aspen/Low-bush cranberry)	Aspen-Rose-Hairy Wild Rye Aspen-Willow	▨	Poplar association; Aspen poplar consociation	Trembling aspen/Low-bush cranberry/Dewberry association
Aspen/Low-bush cranberry-Rose-Red Osier Dogwood	▨	▨	▨	▨	▨ (Most like Balsam poplar consociation)	
Aspen/Alder	▨	Populus tremuloides/ Alnus crispa (Aspen/Alder)	▨	▨	▨	Trembling aspen-Balsam poplar/Bracted honeysuckle/Dewberry
Aspen-Balsam poplar/Red osier dogwood	▨	▨	▨	▨	Intermediate between Aspen and Balsam poplar consociations	
Balsam poplar/Red osier dogwood	Balsam poplar/Willow/ Reed grass	▨	▨	Poplar/Dogwood forage type	Balsam poplar consociation	▨

Table 6.7

COMPARISON OF CONIFEROUS FOREST VEGETATION WITHIN BOREAL MIXEDWOOD ECOREGION

Keg River 1985 Plant Associations	Kocaoglu and Bennett 1983 East-Central Alberta Forage Types	Archibald 1985 (in preparation) Biogeoclimatic Classification	Bishoff 1981 Jean D'Or Prairie Forage Types	Bishoff (revised 1984) Frost Hills (Central Alberta)	Moss, 1953a Forest Associations - Northwest Alberta	Achuff and LaRoi 1977 Spruce-Fir Community Types	Archibald et al 1984 Deep Basin (83L Map Sheet)
Lodgepole pine/Black spruce/Labrador tea/Feathermoss (edaphic)	Jack pine-Black spruce/Feathermoss (edaphic)	▨	▨	▨	Lodgepole pine consociation; Pine-Feathermoss faciation	▨	*Black spruce-Lodgepole pine/Labrador tea/Feathermoss *Lodgepole pine/Feathermoss
Lodgepole pine/Alder (edaphic)	Jack pine/Alder/Twinflower (edaphic)	▨	▨	▨		▨	▨
Lodgepole pine-Aspen	▨	Pinus contorta/Viburnum edule/Feathermoss (Lodgepole pine/Low-bush cranberry/Feathermoss)	▨	▨		▨	▨
White spruce-Aspen/Low-bush cranberry-Rose	White spruce-Aspen/Cranberry/Sarsaparilla	Picea glauca/Viburnum edule/Hylocomium splendens (White spruce/Low-bush cranberry/Feathermoss)	Aspen-White spruce/Prickly rose	▨	▨	White spruce/Viburnum/Hylocomium	▨
White spruce/Feathermoss	White Spruce/Feathermoss		White spruce/Moss	White spruce/Fir/Feathermoss	White spruce association; feathermoss faciation	White spruce/Viburnum/Hylocomium	▨

* similar vegetation, but dissimilar environments in general

Table 6.3

COMPARISON OF WETLAND VEGETATION WITHIN THE BOREAL MIXEDWOOD ECOREGION

Keg River 1985 Plant Associations	Kocaoglu and Bennett 1983 East-Central Alberta Forage Types	Archibald 1985 (in preparation) Biogeoclimatic Classification	Bishoff 1981 Jean D'Or Prairie Forage Types	Bishoff (revised 1984) Frost Hills (Central Alberta)	Moss, 1953 Marsh, bog vegetation	Archibald et al 1984 Deep Basin (83L Map Sheet)
Black spruce/Labrador tea/Moss	Black spruce/Labrador tea/ Moss	Picea mariana/Ledum groenlandicum/Feathermoss (Black spruce/Labrador Feathermoss)	▨	Black spruce/Labrador tea/Feathermoss	Sphagnum bog series	Black spruce/Labrador tea/ Feathermoss
Willow Shrubland-Depressional and Level Terrain	▨	▨	Willow-Marsh reed grass Willow-Sedge-Moss	▨	Drepanocladus-Carex bog series	▨
Seepage willow	▨	▨	▨	▨	▨	▨
Sedge fen	▨	▨	Sedge-moss	▨	Drepanocladus-Carex bog series	▨

Table 6.4

Comparison of Grassland Vegetation Within the Boreal Mixedwood Ecoregion

Keg River 1985 Plant Associations	Moss, 1952 Grassland Peace River Area	Wilkinson and Johnson, 1983 Grassland, Peace River
Grassland (Carex-Stipa-Agropyron), steep south slopes	Agropyron-Stipa-Carex community, Stipa faciation, steep south-facing slopes	Stipa spartea var. curtiseta-Carex spp. Artenisia frigida, steep south-facing slopes
Keg River Prairie; Probably = Moss (1952) before cultivation	Agropyron-Stipa-Carex community; Agropyron-Carex faciation	▨

LIST OF REFERENCES

Achuff, P.L. and G.H. LaRoi. 1977. Picea-Abies forests in the highlands of northern Alberta. Vegetatio 33 (2/3): 127-146.

Alberta. Energy and Natural Resources. Natural Resource Information Services. 1985. Integrated Resource Inventory Site Manual. Report Dept. 88. Edmonton.

Archibald, J.H. 1985. Biogeoclimatic classification of Northwestern Alberta. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division. Edmonton. In preparation.

Archibald, J.H., N.B. Ferguson, R.W. Haag, W.K. Hay and D.J. O'Leary. 1984. An Integrated Resource Inventory of the Deep Basin Area (83L). Volume II: Vegetation Classification. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division. Edmonton. Report No. T/78.

Bishoff, K. 1982. Forage inventory of the Frost Hills Study Area. Revised by D. Downing 1984. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. Report No. T/19 - No. 6.

______. 1981. Forage inventory of the Jean D'Or Prairie Study Area - Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. ENR Report No. T/19 - No. 1.

Canada Soil Survey Committee, Subcommittee on Soil Classification. 1978. The Canadian System of Soil Classification. Agriculture Canada, Ottawa. Publication 1646.

Canada Soil Survey Committee. 1976. The Canadian system of soil classification. Agriculture Canada. Publication 1455 (revised).

Daubenmire, R. 1968. Plant Communities; A Textbook of Plant Synecology. Harper and Row (New York).

Dobbs, R.C. 1972. Regeneration of white and Engelmann spruce: A literature review with special reference to the British Columbia interior. Canada Dept. of Environment, Canadian Forestry Service, Pacific Research Centre, Information Report BC-X-69.

Glaser, P.H. 1983. Vegetation patterns in the North Black River peatland, northern Minnesota. Can. J. Botany 61: 2085-2104.

Gorham, E. 1957. The development of peatlands. Quart. Rev. Biol. 32: 145-166.

Jenny, H. 1961. Derivations of state factor equations of soils and ecosystems. Soil Science Society of America Proceedings 25: 385-388.

Kocaoglu, S. and K. Jaques Bennett. 1983. An Integrated Resource Inventory of the Special Lakeland Area. Alberta Energy and Natural Resources, Resource Evaluation and Planning Division, Edmonton. Report No. T/48.

Krajina, V. 1969. Ecology of Western North America. Vol. 2, No. 1. University of British Columbia, Dept. Botany, Vancouver.

La Roi, G.H. 1967. The Boreal Forest: Taiga. pp. 151-168. In Alberta, A Natural History, edited by W.G. Hardy. Hurtig Publishers, Edmonton, Alberta.

Major, J. 1951. A functional, factorial approach to plant ecology. Ecology 32: 392-412.

Moss, E.H. 1952. Grassland of the Peace River region, western Canada. Can. J. Botany 30: 98-124.

__________. 1953a. Forest communities in northwestern Alberta. Can. J. Botany 31: 212-252.

__________. 1953b. Marsh and bog vegetation in northwestern Alberta. Can. J. Botany 31: 448-470.

__________. 1983. Flora of Alberta. 2nd ed. Revised by John G. Packer. University of Toronto Press, Toronto.

Mueller-Dumbois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley & Sons, Toronto.

Odum, E.P. 1971. Fundamentals of Ecology. 3rd ed. W.B. Saunders & Co., Toronto.

Vitt and others (unpublished). Biological characteristics of bogs and fens. Class notes, October 26, 1983. Botany 421 (Peatlands). University of Alberta, Edmonton.

Wilkinson, K and E.A. Johnson. 1983. Distribution of prairies and solonetzic soils in the Peace River district, Alberta. Can. J. Botany 61: 1851-1860.

APPENDIX 1

1. INVENTORY DATA ANALYSES: LEGENDS FOR TABLES

This part of Appendix 1 explains column and row headings for tables which follow in Section 2. These tables present site data (ENVIRONMENT/SOILS-VEGETATION TABLES), vegetation data (VEGETATION TABLES) and mensuration data (MENSURATION SUMMARY) for plots belonging to plant associations described in Section 3 of Volume II. Detailed soil chemical and textural data are also included for many individual plots but are not grouped by association.

These data are currently stored on the University of Alberta MTS (Michigan Terminal System) computer system, and were manipulated using existing programs that sort data into groups defined by the researcher.

1.1 Environment/Soils-Vegetation Tables

These tables present site data for individual sites comprising an association. Average values are calculated for several parameters and are reported in the MEAN column of each table. Table headings indicate the association to which the table applies. For example, MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS indicates that the table corresponds to the Aspen/Buffalo-berry association (A1) of the Mixedwood (MW) ecoregon. The abbreviation MW A1 is used to facilitate data presentation elsewhere in this volume.

Individual site data are recorded in vertical columns. Upland sites are grouped first by parent material and then by soil moisture status. Wetland sites are ordinated by both moisture and nutrient regime. For example, the **Populus tremuloides/Shepherdia canadensis** association is comprised of 23 plots, 12 of which are on glaciolacustrine parent material (see OVERLYING MATERIAL/UNDERLYING MATERIAL below) and 11 on morainal material. Within this subdivision, sites are ordinated from driest to moistest on the glaciolacustrine materials and again from driest to moistest on morainal materials. A brief description of row headings follows.

PLOT NUMBER

Assigned to an individual plot. Records are stored on and retrieved from computer data banks using this number.

TOWNSHIP, RANGE, MAP SHEET

Self-explanatory.

ELEVATION (MASL)

Elevation in metres above sea level.

SLOPE, ASPECT

Self-explanatory.

ECOLOGICAL MOISTURE REGIME

The following codes are used in the tables and are fully explained in Section 1, Item 15 of the Integrated Resource Inventory Site Manual (Alberta. Energy and Natural Resources. 1984).

SX	subxeric	(driest)
SM	submesic	
M	mesic	
SHG	subhygric	
HG	hygric	
SHD	subhydric	
HD	hydric	(wettest)

NUTRIENT REGIME

The following codes used in the tables are fully explained in Section 1, Item 19 of the Integrated Resource Inventory Site Manual (Alberta, Energy and Natural Resources. 1985).

O	oligotrophic	(most nutrient-poor)
SM	submesotrophic	
M	mesotrophic	
PM	permesotrophic	(most nutrient-rich)

OVERLYING MATERIAL/UNDERLYING MATERIAL

Generally equivalent to parent material, except on organic terrain. Abbreviations follow the Canadian System of Soil Classification (1978) and are detailed in Section 1, Item 23 of the Integrated Resource Inventory Site Manual (Alberta Energy and Natural Resources, 1985). The major ones are as follows:

Landform		Modifier	
C	colluvium	v	veneer
F	fluvial	b	blanket
GF	glaciofluvial	i	inclined
GL	glaciolacustrine	l	level
L	lacustrine	h	hummocky
LT	lacustrotill	t	terrace
M	moraine	r	ridged
O	organic	m	rolling
X	residual	s	sloping (applied to organic materials)

SOIL SUBGROUP/SOIL GREAT GROUP

Abbreviations follow the Canadian System of Soil Classification (1985).

SOIL DRAINAGE

Abbreviations are detailed in Section 1, Item 17 of the Integrated Resource Inventory Site Manual (Alberta Energy and Natural Resources, 1984). These are summarized as follows:

VP - very poor
P - poor
I - imperfect
MW - moderately well
W - well
R - rapid

SOLUM THICKNESS

Top of A horizon to bottom of B horizon.

TYPE AND DEPTH TO RESTRICT (ION)

W - water L - lithic K - carbonate P - frozen	The number indicates depth to restriction in centimetres

THICKNESS LFH:

Self-explanatory

pH LFH/A/B/C

Soil reaction of the litter layer and the A, B and C horizons.

TEXTURE A1/B2/C3

Abbreviations follow the Canadian System of Soil Classification (1978) and are outlined in Section 2, Item 6 of the Integrated Resource Inventory Site Manual (Alberta, Energy and Natural Resources, 1985). These are summarized as follows:

S - sand
Si - silt
C - clay
HC - heavy clay
L - loam

COARSE FRAGMENTS - B(%)

Self explanatory

SEEPAGE (*) & MOTTLING

Presence of seepage indicated by (*) and depth to mottling given in centimetres.

ROOTING DEPTH

Depth at which abundance of roots declines to very few.

ASSOCIATION

The code assigned to each association to facilitate data presentation within the report.

STAND AGE

Age of oldest tree(s) measured in plot, except where these are obviously scattered remnants of pre-existing stands. Not necessarily equivalent to stand age reported in mensuration tables, which is an average of all ages taken in plots.

CANOPY HEIGHT

Average height of trees forming the main canopy.

MEAN ANNUAL INCREMENT

Reported as gross volume, in m^3/ha/yr, as calculated by a mensuration program (Section 1.3 of this Appendix).

STRATA COVERAGE (%) A/B/C/G/D/L

Visually estimated coverages for the tree (A), shrub (B), forb (C), grass and graminoid (G), bryophyte (D) and lichen (L) layers.

SURFACE SUBST(RATE) - DEAD WOOD, ETC.

Per cent of surface covered by various materials; visually estimated.

BIOMASS (KG/HA) FORBS/GRAMINOIDS/BROWSE

Self-explanatory

1.2 Vegetation Tables

There are two levels of vegetation information presented in the vegetation tables: (a) summaries of individual plots within each plant association; and (b) summaries of plant associations.

(a) Individual Plot Summary Tables

These tables present plot data for each plant association in exactly the same order of plots as for the Environment/Soils-Vegetation tables discussed above. This is done to facilitate comparisons between vegetation information and environmental conditions. Again, individual site data are recorded in vertical columns.

The heading of each table gives the name of the association (preceded by its code as discussed in Section 1.1), as well as a list of the abbreviations for term used within the tables (e.g. PRESENCE [%P]). Table headings are defined as follows:

ECOSYM UNIT

The abbreviation assigned to each associations is printed here (e.g. MW A1 for the **Populus tremuloides/Shepherdia canadensis** association). These are discussed in Section 1.1 above.

PLOT NUMBER

See PLOT NUMBER description in Section 1.1 above.

NUMBER OF SPECIES PER PLOT

Total number of species (vascular and non-vascular) are recorded here and an average is calculated.

SPECIES

A seven letter code is assigned to each plant species. Full Latin and common names for each code are given in Appendix 2 of this volume.

A1/A2/E/B1/B2/C/G/D/L LAYER

A1 - main tree canopy
A2 - understory trees over 5 m tall
E - epiphytes (lichens, bryophytes on trees, shrubs)
B1 - Tall shrubs and tree regeneration 2.5-5m tall
B2 - low shrubs and tree regeneration less than 2.5 m tall
C - forbs
G - grasses and grass-like species (e.g. cottongrass, sedge rushes)
D - bryophytes on dominant substrate (usually on soil)
L - lichens on dominant substrate (usually on soil)

PRESENCE (%P)

This measure is defined as the percentage of occurrence of a species in plots which belong to a given plant association, and can range from greater than 0% to 100%. SPECIES are listed in order of highest to lowest presence within each layer.

MEAN COVER (MC)

The average visually estimated foliar cover of a given plant species; percent cover for the species is totalled for all plots and divided by the total number of plots.

COVER (%C)

A visual estimate of foliar cover for a given species in an individual plot. A blank means that the species was not present within the plot. Ranges from 1 to 100 per cent.

SOCIABILITY (S)

Not evaluated

VIGOR (V)

Refers to the relative size and health of the plant.

0 = dead
1 = poor
2 = fair (average)
3 = good
4 = excellent

(b) Summary Vegetation Table

These tables constitute a comparison between the plant associations determined by the vegetation tables, and are a summary of the plant species for all associations. The vegetation program takes the mean cover and percent presence for each plant association and lists them alphabetically by SPECIES. The heading PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE refers to percent presence and mean cover, respectively.

PRESENCE CLASSES

As follows:

Percent Presence	Presence Class
Occurrence in 0.1-20% of plots in association	I
Occurrence in 20.1-40% of plots in association	II
Occurrence in 40.1-60% of plots in association	III
Occurrence in 60.1-80% of plots in association	IV
Occurrence in 80.1-100% of plots in association	V

MEAN SPECIES SIGNIFICANCE

Are the same as those presented in the AVERAGE VALUE column for a given association and species.

The associations are denoted by an alphanumeric code (e.g. MW A1 is the **Populus tremuloides/Shepherdia canadensis** association) as described in Section 1.1 above.

1.3 Mensuration Summary

Each plot at which mensuration data was collected is described with reference to plot number, size, species and a number of related parameters. Abbreviation for species encountered in the Keg River study are as follows:

AW - Trembling aspen (**Populus tremuloides**)
PB - Balsam poplar (**Populus balsamifera**)
BW - Paper birch (**Betula papyrifera**)
SW - White spruce (**Picea glauca**)
SB - Black spruce (**Picea mariana**)
PL - Lodgepole pine (**Pinus contorta** var. **latifolia**)
LT - Tamarack (**Larix laricina**)

Other Abbreviations

MAI	Mean annual increment (= total volume divided by stand age for total MAI, or merchantable volume divided by stand age for merchantable MAI).
S.I.	Site index - a measure of site quality as expressed by height in metres at a reference age (50 years).
CONF	Coniferous (SW, SB, PL, LT)
HDWD	Hardwood (AW, PB, BW)

Summary tables for each association in which mensuration data was collected for individual plots are also given. The association is identified in the table heading by its assigned name and abbreviation (e.g. MW A1 **Populus tremuloides/Shepherdia canadensis**). Two summary tables are produced; the first gives statistical information pertaining to various parameters analysed for all plots together, and the second gives mensuration data for individual plots.

PLOT NUMBERS

These are recorded somewhat differently than for the environment and vegetation tables. As the mensuration program currently permits no alphabetic characteris in plot numbers, equivalent numbers are defined.

e.g. 4KR001 on vegetation table = 01 on mensuration table
4KR053 on vegetation table = 53 on mensuration table

ENVIRONMENT/SOILS - VEGETATION SUMMARY TABLES

KEG RIVER

ENVIRONMENT/SOILS-VEGETATION TABLES

RESOURCE INVENTORY

TITLE : MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

TABLE 1

		4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R017	R046	R047	R139	R115	R007	R068	R138	R029	R066	R054	R035	R022	R032	R021	R064	R009	R062	R063
TOWNSHIP		98	102	102	101	95	102	95	102	101	95	94	102	102	101	101	95	101	94	95
RANGE & MERIDIAN		22W5	02W6	02W6	01W6	22W5	02W6	22W5	02W6	25W5	22W5	23W5	02W6	23W5	01W6	23W5	22W5	22W5	22W5	22W5
MAPSHEET		84F	84F	84E	84E	84F	84E	84F	84E	84F	84F	84F	84E	84F	84E	84F	84F	84F	84F	84F
		12	13	16	9	6	16	5	16	13	5	4	16	13	16	13	3	12	3	3
PHYSIOGRAPHIC SUBREGION		CHU	CP	CP	CHU	CHU	CP	CHU	CP	CP	PRL	CHU	CP	HLP	CP	HLP	CHU	HLP	PRL	PRL
GEOMORPHIC SYSTEM																				
ECOSECTION		CX1	M1	M2	M4	GL1	M2	M1	M2	M1	GL3	MX1	M2	GL2	GLM1	GL2	GL1	GL1	GL2	GL2
ELEVATION(MASL)	507.9	610	436	488	575	605	490	648	450	450	612	518	497	405	510	404	562	405	495	518
SLOPE(%)	3.0	9	7	4	5	5	2	2	2	2	5	0	2	2	2	4	0	1	0	5
ASPECT(DEG)		360	26	352	360	154	10	270	360	45	0		360	360	60	320		30		120
ENVIRONMENT/SOILS :																				
ECOLOGICAL MOISTURE REGIME		SM	M	M	M	M	M	M	M	M	M	SHG	SHG	M	SHG	M	M	M	M	M
NUTRIENT REGIME		SM	SM	SM	SM	M	M	M	M	M	PM	M	M	M	M	M	SM	SM	M	M
OVERLYING MATERIAL		Mv	Mi	Mu	Mi	Mi	Mu	Mu	Mu	Mu	Mu	Mu	M	GLv	GLv	GLv	LTv	GLu	GL1	LT
UNDERLYING MATERIAL		Xi												M	M	Mu	X			
EROSION/DEPOSITION																				
SOIL SUBGROUP		SZ	GL	GL	O	G	D	O	SZ	GL	O	O	O	O	GL	SZ	GLSZ	FE	DG	DG
SOIL GREAT GROUP		GL	GL	GL	GL	SO	GL	LG	GL	GL	LG	LG	LG	GL	GL	GL	GL	LG	SO	SO
SOIL DRAINAGE		W	I	I	W	MW	MW	P	I	MW	I	I	P	W	P	I	MW	I	MW	MW
SOLUM THICKNESS(CM)	50.2	26	31	64	57	62	57	43	51	25	70	54	43	45	44	63	27	86	55	56
TYPE & DEPTH TO RESTRICT(CM)		L 25											43							
THICKNESS LFH(CM)	4.8	4	9	3	4	2	5	3	2	10	3	7	4	4	4	2	4	4	4	5
pH-LFH	4.5												4.5							
-A	4.7	4.5	3.7	3.8	6.0	5.5	4.7	5.7	5.5	4.1	4.5	5.5	4.6	4.4	5.3	4.1	5.1	4.2	4.1	3.8
-B	4.9	3.7	3.7	3.8	4.0	6.0	5.1	5.5	5.5	3.6	5.9	6.6	5.8	6.4	5.4	4.7	4.6	3.9	4.8	3.8
-C	7.1	5.5	4.2	7.5	6.0	8.0	7.1	6.6	8.0	5.8	7.4	7.4	6.4	7.9	6.0	7.8	6.9	7.6	8.0	7.7
TEXTURE-A/1		SiL	SiCL	L	L	L	CL	SiCL	CL	SiCL	SiCL	C	CL	SiCL	C	SiCL	SiL	SCL	CL	CL
-B/2		C	HC	C	CL	CL	C	HC	CL	C	C	HC	C	C	C	HC	C	C	HC	CL
-C/3		SiCL	HC	CL	SiCL	CL	C	SCL	SCL	C	C	C	C	C	C	HC	C	HC	SiCL	HC
COARSE FRAGMENTS-B(%)	3.2	1	5	5	5	5	1	1	10	5	5	5	20	0	0	0	2	0	0	2
SEEPAGE(*) & MOTTLING(CM)			* 10					4			6	9				16				
ROOTING DEPTH(CM)	57.0	40	30	40	57	45	60	90	70	38	90	54	43	95	90	40	65	56	80	80
VEGETATION :																				
ASSOCIATION		A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1
STAND AGE(YR)	47.3	42	71	41	57	24	45	42	41	59	37	42	36	58	76	48	42	86	32	34
CANOPY HEIGHT(M)	14.7	12	14	19	22	8	15	14	11	19	14	12	10	20	25	16	12	20	11	10
MEAN ANNUAL INCREMENT	2.5	1.9	1.8	0.9	5.4	0.4	3.3	3.3	1.5	5.9	2.1	1.9	1.5	3.4	4.9	2.3	1.1	2.9	1.8	1.9
STRATA COVERAGE(%)-A	53.7	40	50	50	55	40	60	40	50	65	50	60	65	45	50	45	65	55	55	70
-B	54.3	15	35	75	75	35	30	40	75	65	25	60	70	80	70	65	90	99	45	35
-C	24.9	45	20	15	30	12	40	25	20	20	15	30	15	15	65	15	10	25	10	30
-G	18.3	0	1	5	1	1	30	10	15	7	5	30	0	14	1	1	1	60	55	65
-D	3.3	35	5	1	3	1	2	1	1	7	1	1	2	3	1	1	1	5	1	1
-L	1.3	12	1	1	0	2	2	1	2	1	1	0	1	1	0	1	1	2	0	0
SURFACE SUBST(%)-DEAD WOOD	6.2	10	3	30	5	2	30	5	2	10	15	2	5	1	5	1	2	5	2	1
-BEDROCK	0.4	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	89.4	90	97	70	95	97	70	95	98	90	85	98	95	0	95	99	98	95	98	99
-OPEN WATER	3.9	0	0	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	208.6	99	146	241			141	315		223	435	311	220	0		152	39	136	474	178
-GRAMINOIDS	83.4	0	20	29			90	38		30	33	114	0	170		53	0	139	151	108
-BROWSE	20.3						1	67			24			12						

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS TABLE 1

	4K	4K	4K	4K
PLOT NUMBER	R109	R116	R059	R080
TOWNSHIP	102	101	95	95
RANGE & MERIDIAN	23W5	23W5	22W5	22W5
MAPSHEET	84E 15	84F 13	84F 4	84F 3
PHYSIOGRAPHIC SUBREGION	HLP	HLP	PRL	PRL
GEOMORPHIC SYSTEM				
ECOSECTION	OGL2	GL2	GL3	GL3
ELEVATION(MASL)	450	420	590	543
SLOPE(%)	4	2	3	2
ASPECT(DEG)	275	45	50	288
ENVIRONMENT/SOILS :				
ECOLOGICAL MOISTURE REGIME	M	M	M	SHG
NUTRIENT REGIME	M	M	M	M
OVERLYING MATERIAL	LT1	GLh	GLu	GL
UNDERLYING MATERIAL				
EROSION/DEPOSITION				
SOIL SUBGROUP	SZ	SZ	GL	G
SOIL GREAT GROUP	GL	GL	GL	SS
SOIL DRAINAGE	MW	MW	I	MW
SOLUM THICKNESS(CM)	44	44	56	52
TYPE & DEPTH TO RESTRICT(CM)				
THICKNESS LFH(CM)	3	2	11	12
pH-LFH				
-A	4.2	4.5	5.5	
-B	4.7	4.6	5.8	5.6
-C	8.2	8.1	7.6	7.6
TEXTURE-A/1	SiCL	SiL	L	
-B/2	C	C	HC	HC
-C/3	HC	C	HC	HC
COARSE FRAGMENTS-B(%)	1	0	1	0
SEEPAGE(*) & MOTTLING(CM)			4	0
ROOTING DEPTH(CM)	44	18	56	30
VEGETATION :				
ASSOCIATION	A1	A1	A1	A1
STAND AGE(YR)	50	53	36	37
CANOPY HEIGHT(M)	13	19	11	12
MEAN ANNUAL INCREMENT	2.0	2.7	1.5	2.9
STRATA COVERAGE(%)-A	45	40	60	80
-B	50	55	40	20
-C	20	10	25	60
-G	10	40	60	10
-D	1	1	1	1
-L	1	0	1	0
SURFACE SUBST(%)-DEAD WOOD	2	1	2	2
-BEDROCK	0	0	0	0
-STONES	0	0	0	0
-MIN.SOIL	0	0	0	0
-ORGANIC	98	99	98	98
-OPEN WATER	0	0	0	0
BIOMASS(KG/HA)-FORBS	195		102	347
-GRAMINOIDS	146		216	164
-BROWSE	17		1	

TITLE : MW A2 P. TREMULOIDES/ROSA SPP./EQUISETUM PRATENSE TABLE 2

		4K	4K	4K
PLOT NUMBER	MEAN	R134	R076	R042
TOWNSHIP		103	94	102
RANGE & MERIDIAN		02W5	22W5	01W6
MAPSHEET		84E	84F	84E
		16	3	16
PHYSIOGRAPHIC SUBREGION				
GEOMORPHIC SYSTEM				
ECOSECTION		F1	F2	F1
ELEVATION(MASL)	430.0	440	420	430
SLOPE(%)	2.7	1	3	4
ASPECT(DEG)		345	23	20
ENVIRONMENT/SOILS :				
ECOLOGICAL MOISTURE REGIME		M	SHG	SHG
NUTRIENT REGIME		M	PM	M
OVERLYING MATERIAL		Ft	Ft	F
UNDERLYING MATERIAL				
EROSION/DEPOSITION				
SOIL SUBGROUP		CU	CU	CU
SOIL GREAT GROUP		R	R	R
SOIL DRAINAGE		R	MW	MW
SOLUM THICKNESS(CM)	29.5		53	6
TYPE & DEPTH TO RESTRICT(CM)				
THICKNESS LFH(CM)	8.0	7	12	5
pH-LFH	0.0			
-A	6.7	8.0		5.4
-B	4.7		4.7	
-C	7.1	8.0	7.5	5.7
TEXTURE-A/1		SL		SiC
-B/2			SCL	
-C/3		L	SL	CL
COARSE FRAGMENTS-B(%)	0.0		0	
SEEPAGE(*) & MOTTLING(CM)				
ROOTING DEPTH(CM)	63.0	100	38	51
VEGETATION :				
ASSOCIATION		A1	A1	A1
STAND AGE(YR)	42.7	40	41	47
CANOPY HEIGHT(M)	17.3	16	14	22
MEAN ANNUAL INCREMENT	6.3	5.0	4.3	9.5
STRATA COVERAGE(%)-A	63.3	60	65	65
-B	53.3	55	90	15
-C	38.3	40	25	50
-G	4.0	1	10	1
-D	1.0	1	1	1
-L	0.0	0	0	0
SURFACE SUBST(%)-DEAD WOOD	13.3	30	7	3
-BEDROCK	0.0	0	0	0
-STONES	0.0	0	0	0
-MIN.SOIL	0.0	0	0	0
-ORGANIC	86.7	70	93	97
-OPEN WATER	0.0	0	0	0
BIOMASS(KG/HA)-FORBS	163.5		99	228
-GRAMINOIDS	44.0		86	2
-BROWSE	32.0		32	

TITLE : MW A3.0 P. TREMULOIDES/VIBURNUM EDULE-ROSA SPP./ELYMUS INNOVATUS PHASE TABLE 3

	MEAN	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER		RO65	R114	RO53	R112	RO23	RO60	RO39	R124	RO57	RO12	RO72	RO73
TOWNSHIP		95	101	94	101	101	96	102	96	94	97	94	94
RANGE & MERIDIAN		22W5	23W5	23W5	23W5	23W5	21W5	25W5	23W5	22W5	22W5	22W5	23W5
MAPSHEET		84F 4	84F 13	84F 4	84F 13	84F 13	84F 6	84F 13	84F 5	84F 3	84F 5	84F 4	84F 4
PHYSIOGRAPHIC SUBREGION		PRL	HLP	CHU	HLP	HLP	CHU	CP	CHU	PRL	CHU		
GEOMORPHIC SYSTEM													
ECOSECTION		GL3	GLO2	M1	GL1	GLO2	GL1	GLM1	M1	GL2	M2	F2	F2
ELEVATION(MASL)	505.9	590	413	497	405	411	533	437	622	525	708	450	480
SLOPE(%)	4.7	0	0	4	3	4	4	4	0	3	3	31	0
ASPECT(DEG)				245	8	340	95	40		130	360	42	
ENVIRONMENT/SOILS :													
ECOLOGICAL MOISTURE REGIME		M	M	M	M	SHG	SHG	SHG	M	M	SM	M	M
NUTRIENT REGIME		M	M	M	M	M	PM	M	M	M	SM	M	M
OVERLYING MATERIAL		GLv	GL	GLu	GLh	GLr	GLi	GLv	Mu	Mu	Mu	Ci	GFt
UNDERLYING MATERIAL		LT						Mu					
EROSION/DEPOSITION													
SOIL SUBGROUP		GL	SZ	DG	GL	BL	GLG	O	GLSZ	O	BR	O	D
SOIL GREAT GROUP		GL	GL	SO	GL	SZ	SO	HG	GL	GL	GL	EB	GL
SOIL DRAINAGE		MW	MW	MW	I	MW	I	P	I	MW	MW	W	W
SOLUM THICKNESS(CM)	53.4	62	58	63	40	54	48	41	87	39	57	32	60
TYPE & DEPTH TO RESTRICT(CM)		K 62											
THICKNESS LFH(CM)	5.7	4	3	5	3	6	10	3	10	10	3	7	4
pH-LFH	0.0												
-A	5.4	4.9	4.5	6.0	6.5	5.5	4.4	6.5	5.5	4.5			5.3
-B	5.5	5.0	4.5	6.0	6.5	8.0	4.1	7.2	6.0	4.0	3.4	5.8	5.1
-C	7.0	6.8	8.0	7.5	8.0	8.0	5.8	7.5	8.0	7.5	4.0	6.6	6.6
TEXTURE-A/1		CL	SiCL	L	SiCL	L	C	C	CL	CL			SiCL
-B/2		HC	SiCL	C	C	C	C	C	SiC	C	C	SCL	SCL
-C/3		HC	C	C	C	C	C	C	SiCL	C	C	C	LS
COARSE FRAGMENTS-B(%)	3.6	0	0	0	0	0	1	5	2	15	5	15	0
SEEPAGE(*) & MOTTLING(CM)					3				1				
ROOTING DEPTH(CM)	62.8	62	46	95	40	54	70	80	70	39	57	80	60
VEGETATION :													
ASSOCIATION		A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0	A3.0
STAND AGE(YR)	45.9	43	51	30	45	50	39	52	96	29	41	36	39
CANOPY HEIGHT(M)	14.8	14	18	11	14	18	11	15	26	14	8	16	13
MEAN ANNUAL INCREMENT	3.0	3.6	4.3	1.3	3.1	3.5	1.6	4.1	3.4	3.5	1.9	3.7	2.1
STRATA COVERAGE(%)-A	50.8	50	60	50	60	20	65	45	55	60	55	30	60
-B	24.6	25	20	30	30	20	5	45	25	35	15	30	15
-C	22.5	10	20	20	25	30	15	35	15	10	40	35	15
-G	23.8	40	40	50	40	25	20	5	25	15	5	5	15
-D	3.0	2	3	1	1	5	3	1	1	1	16	1	1
-L	0.5	1	1	0	0	1	1	0	1	0	1	0	0
SURFACE SUBST(%)-DEAD WOOD	2.5	5	1	2	1	2	2	0	3	5	5	2	2
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	96.7	95	99	98	99	98	98	90	97	95	95	98	98
-OPEN WATER	0.0	0	0	0	0	0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	198.8	94		81		276	255	398		143	129	209	204
-GRAMINOIDS	128.2	135		260		229	91	89		134	30	52	134
-BROWSE	6.3	8				1				10			

TITLE : MW A3.1 P.TREMULOIDES/VIBURNUM EDULE-ROSA SPP./CORNUS CANADENSIS PHASE

TABLE 4

PLOT NUMBER	MEAN	4K R108	4K R030	4K R055	4K R074	4K R126	4K R033	4K R132
TOWNSHIP		102	101	94	94	99	101	100
RANGE & MERIDIAN		23W5	25W	23W5	23W5	20W5	01W6	22W5
MAPSHEET		84F 13	84F 13	84F 4	84F 3	84F 11	84E 16	84F 11
PHYSIOGRAPHIC SUBREGION		HLP	CP	CHU	CHU	CHU	CHU	CHU
GEOMORPHIC SYSTEM								
ECOSECTION		GL2	GLM1	MX1	M1	CX1	M3	CM1
ELEVATION(MASL)	534.7	445	451	671	590	466	617	503
SLOPE(%)	4.1	4	2	3	2	9	5	4
ASPECT(DEG)		300	40	322	360	50	270	340
ENVIRONMENT/SOILS :								
ECOLOGICAL MOISTURE REGIME		M	M	M	M	SHG	SHG	M
NUTRIENT REGIME		M	PM	SM	M	M	SM	M
OVERLYING MATERIAL		GLh	GLv	Mv	Mu	M1	M1	Cv
UNDERLYING MATERIAL			GF	Xm				M
EROSION/DEPOSITION								
SOIL SUBGROUP		SZ	D	BR	O	GLD	O	O
SOIL GREAT GROUP		GL	GL	GL	GL	GL	GL	GL
SOIL DRAINAGE		MW	MW	MW	MW	MW	MW	MW
SOLUM THICKNESS(CM)	43.6	41	50	44	57	41	46	26
TYPE & DEPTH TO RESTRICT(CM)				L 40				
THICKNESS LFH(CM)	6.4	4	9	6	5	10	4	7
pH-LFH	0.0							
-A	4.7	4.3	5.3	4.0	4.1	6.5	3.9	4.5
-B	4.3	5.4	4.6	3.4	3.9	4.5	3.5	4.5
-C	4.8	8.2	4.0	3.4	5.9	4.5	3.3	4.5
TEXTURE-A/1		CL	C	L	CL	L	CL	L
-B/2		C	C	C	C	CL	C	CL
-C/3		HC	C	C	C	SiC	C	SiCL
COARSE FRAGMENTS-B(%)	3.3	1	0	5	10	2	5	0
SEEPAGE(*) & MOTTLING(CM)								
ROOTING DEPTH(CM)	55.1	41	50	40	75	60	40	80
VEGETATION :								
ASSOCIATION		A3.1	A3.1	A3.1	A3.1	A3.1	A3.1	A3.1
STAND AGE(YR)	75.4	40	76	121	62	76	77	76
CANOPY HEIGHT(M)	21.1	16	22	26	14	21	29	20
MEAN ANNUAL INCREMENT	3.0	3.4	5.1	1.3	1.4	3.8	3.8	2.1
STRATA COVERAGE(%)-A	41.4	40	50	30	50	50	35	35
-B	40.0	25	50	65	30	35	35	40
-C	42.1	20	40	60	35	60	30	50
-G	4.3	5	15	5	1	1	2	1
-D	4.3	1	1	1	15	1	10	1
-L	0.4	0	0	1	1	0	1	0
SURFACE SUBST(%)-DEAD WOOD	7.0	5	5	12	10	10	5	2
-BEDROCK	0.0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0
-ORGANIC	93.0	95	95	88	90	90	95	98
-OPEN WATER	0.0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	313.0	154	239	680	154		338	
-GRAMINOIDS	80.2	102	202	80	0		17	
-BROWSE	45.5	13		78				

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW A4 P. TREMULOIDES/VIBURNUM EDULE-ROSA-CORNUS STOLONIFERA TABLE 5

		4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R051	R052	R002	R038	R028	R008	R020	R048	R081
TOWNSHIP		101	101	99	101	101	100	100	101	98
RANGE & MERIDIAN		24W5	24W5	22W5	01W6	24W5	25W5	24W5	01W6	22W5
MAPSHEET		84F 13	84F 13	84F 12	84E 16	84F 13	84F 11	84F 13	84E 16	84F 11
PHYSIOGRAPHIC SUBREGION		HLP	HLP	HLP	CP	HLP	HLP	HLP	CHU	CHU
GEOMORPHIC SYSTEM										
ECOSECTION		GL1	GL1	GL1	GLM1	GL1	GL1	GL1	FM2	GL4
ELEVATION(MASL)	454.1	422	422	460	475	433	405	445	475	550
SLOPE(%)	2.4	0	1	2	5	1	1	2	5	5
ASPECT(DEG)					30	360		90	360	360
ENVIRONMENT/SOILS :										
ECOLOGICAL MOISTURE REGIME		M	M	M	SHG	SHG	SHG	M	SHG	SHG
NUTRIENT REGIME		PM	PM	M	M	PM	PM	M	PM	PM
OVERLYING MATERIAL		GL1	GL1	GLu	GLu	GL1	GLu	GLu	Fv	F
UNDERLYING MATERIAL								M	Xi	
EROSION/DEPOSITION										
SOIL SUBGROUP		O	HU	GL	D	HU	O	O	O	GLCU
SOIL GREAT GROUP		LG	LG	GL	GL	LG	LG	LG	LG	R
SOIL DRAINAGE		I	I	I	MW	I	P	P	I	I
SOLUM THICKNESS(CM)	48.0	41	63	43	49	50	65	43	69	9
TYPE & DEPTH TO RESTRICT(CM)									101	
THICKNESS LFH(CM)	7.2	7	7	5	6	12	6	3	5	14
pH-LFH	0.0									
-A	5.6		5.1	7.0	5.5	5.4	5.0	4.9	5.7	6.5
-B	5.3	5.4	5.6	7.0	4.8	6.0	4.4	4.6	4.8	
-C	6.2	6.3	6.9	7.0	5.3	6.2	4.5	5.3	6.4	8.0
TEXTURE-A/1			C	CL	SiCL	C	HC	HC	SiC	SiC
-B/2		C	HC	SiC	HC	HC	HC	HC	SiC	
-C/3		SiC	CL	C	HC	C	SiC	HC	SiC	SiC
COARSE FRAGMENTS-B(%)	0.0	0	0	0	0	0	0	0	0	0
SEEPAGE(*) & MOTTLING(CM)		0			49			8	24	15
ROOTING DEPTH(CM)	80.3	80	95	150	85	90	50	53	70	50
VEGETATION :										
ASSOCIATION		A4	A4	A4	A4	A4	A4	A4	A4	A4
STAND AGE(YR)	72.6	75	87	64	71	79	66	57	84	70
CANOPY HEIGHT(M)	26.0	27	30	21	26	29	24	21	27	29
MEAN ANNUAL INCREMENT	5.1	6.4	8.0	4.6	3.3	4.6	3.4	5.1	4.9	5.8
STRATA COVERAGE(%)-A	51.7	55	60	40	50	50	50	40	60	60
-B	68.3	80	80	45	95	95	70	10	65	75
-C	33.3	35	70	25	25	10	45	30	25	35
-G	2.7	1	1	5	1	1	3	1	10	1
-D	1.6	1	0	3	1	1	5	1	1	1
-L	0.6	0	0	1	1	1	0	1	1	0
SURFACE SUBST(%)-DEAD WOOD	8.2	5	8	3	7	30	1	5	10	5
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0
-MIN. SOIL	0.0	0	0	0	0	0	0	0	0	0
-ORGANIC	91.8	95	92	97	93	70	99	95	90	95
-OPEN WATER	0.0	0	0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	228.8	376	225	173	243	76	363	143	214	246
-GRAMINOIDS	32.8	10	0	178	66	8	16	0	17	0
-BROWSE	26.8	17			38		46	30	13	17

TITLE : MW A5 P.TREMULOIDES/ALNUS CRISPA TABLE 6

		4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R004	R088	R093	R096	R122	R045	R013	R131	R121	R019	R125
TOWNSHIP		98	96	97	97	95	102	97	100	96	98	97
RANGE & MERIDIAN		22W5	22W5	22W5	22W5	23W5	24W5	22W5	23W5	22W5	22W5	22W5
MAPSHEET		84F 12	84F 5	84F 5	84F 5	84F 5	84F 13	84F 3	84F 12	84F 5	84F 6	84F 6
PHYSIOGRAPHIC SUBREGION		CHU	CHU	CHU	CHU	CHU	CP	CHU	CHU	CHU	CHU	CHU
GEOMORPHIC SYSTEM												
ECOSECTION		MGF2	GF1	GFX1	GFX1	GF1	M1	GFX1	M3	M1	GF2	GL3
ELEVATION(MASL)	677.4	675	725	695	720	633	468	760	740	705	650	680
SLOPE(%)	3.8	2	2	5	5	0	5	10	3	6	1	3
ASPECT(DEG)		360		215	90		185	300	210	75	120	178
ENVIRONMENT/SOILS :												
ECOLOGICAL MOISTURE REGIME		SM	M	M	M	M	M	M	M	M	SHG	SHG
NUTRIENT REGIME		SM	SM	M	M	M	M	M	SM	M	PM	PM
OVERLYING MATERIAL		GFb	GFu	GFv	GFv	GFv	Mv	Mv	Mi	Mm	Mu	GLu
UNDERLYING MATERIAL		Xr		GLr	Mi	GL	X	Xm				
EROSION/DEPOSITION												
SOIL SUBGROUP		E	E	E	O	E	D	BR	GLBR	O	O	GLD
SOIL GREAT GROUP		EB	EB	EB	GL	EB	GL	GL	GL	GL	GL	GL
SOIL DRAINAGE		W	W	W	MW	MW	MW	W	I	W	MW	I
SOLUM THICKNESS(CM)	58.7	57	29	46	42	65	54	64	65	65	84	75
TYPE & DEPTH TO RESTRICT(CM)		L 60			K 44			L 125				
THICKNESS LFH(CM)	6.4	7	6	13	2	4	4	6	4	5	9	10
pH-LFH	0.0											
-A	5.5	8.0	6.5	5.0	6.0	4.5	3.2	4.3	5.0	5.5	5.0	8.0
-B	5.7	7.0	6.5	6.5	6.5	5.5	3.1	3.5	4.5	6.5	4.6	8.0
-C	5.2	4.5	5.5	7.0	7.0	5.5	2.9	3.5	4.0	4.5	5.1	8.0
TEXTURE-A/1		FS	LS	LS	SiL	SiL	C	L	SL	SL	L	L
-B/2		S	L	S	SiCL	LS	HC	CL	SiL	CL	L	SiCL
-C/3			S	SL	SCL	SiCL	C	SL	L	CL	SCL	SiL
COARSE FRAGMENTS-B(%)	6.2	0	10	30	15	1	1	2	3	5	1	0
SEEPAGE(*) & MOTTLING(CM)									10			
ROOTING DEPTH(CM)	64.4	60	65	65	42	70	76	120	50	65	45	50
VEGETATION :												
ASSOCIATION		A5	A5	A5	A5	A5	A5	A5	A5	A5	A5	A5
STAND AGE(YR)	71.0	49	74	63	66	123	69	37	56	130	57	57
CANOPY HEIGHT(M)	20.5	18	21	20	20	28	20	15	14	26	22	22
MEAN ANNUAL INCREMENT	5.8	2.8	8.0	9.0		2.5	10.7	4.8	3.3	2.9	8.0	5.9
STRATA COVERAGE(%)-A	53.6	85	75	55	45	25	50	60	70	30	55	40
-B	50.4	99	65	80	45	50	40	20	40	35	70	10
-C	43.2	35	25	70	40	40	35	45	50	10	70	55
-G	10.5	0	40	1	1	60	1	1	2	8	1	1
-D	2.8	2	1	1	5	2	3	7	7	1	0	2
-L	0.9	2	0	0	1	0	1	3	1	0	1	1
SURFACE SUBST(%)-DEAD WOOD	9.6	10	5	5	40	15	5	15	5	3	1	2
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	90.4	90	95	95	60	85	95	85	95	97	99	98
-OPEN WATER	0.0	0	0	0	0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	197.1	80	174	284	98		206	400			138	
-GRAMINOIDS	18.4	0	106	8	9		0	6			0	
-BROWSE	27.3	3					70				9	

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW A6 P.TREMULOIDES-POPULUS BALSAMIFERA/CORNUS STOLONIFERA TABLE 7

		4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R137	R113	R015	R082	R130	R071
TOWNSHIP		101	102	102	98	100	94
RANGE & MERIDIAN		24W5	23W5	01W6	22W5	21W5	22W5
MAPSHEET		84F	84F	84E	84F	84F	84F
		12	13	16	11	11	4
PHYSIOGRAPHIC SUBREGION		HLP	HLP	CP	HLP	CHU	
GEOMORPHIC SYSTEM							
ECOSECTION		GL3	GL2	GLM1	OGL1	CX1	F2
ELEVATION(MASL)	480.8	460	420	463	528	610	404
SLOPE(%)	3.5	3	4	4	0	8	2
ASPECT(DEG)		020	12	20		30	360
ENVIRONMENT/SOILS :							
ECOLOGICAL MOISTURE REGIME		M	SHG	SHG	SHG	SHG	M
NUTRIENT REGIME		M	M	PM	PM	PM	PM
OVERLYING MATERIAL		GLi	GLh	GL	GL	Chi	Ft
UNDERLYING MATERIAL					LT		
EROSION/DEPOSITION							
SOIL SUBGROUP		GLD	O	GL	O	D	CU
SOIL GREAT GROUP		GL	GL	GL	G	GL	R
SOIL DRAINAGE		MW	MW	I	I	MW	W
SOLUM THICKNESS(CM)	36.6	47	30	48	22	36	
TYPE & DEPTH TO RESTRICT(CM)							
THICKNESS LFH(CM)	10.3	13	4	11	18	12	4
pH-LFH	0.0						
-A	6.5	7.0	6.5	5.8	6.5	5.7	7.3
-B	6.9	7.0	7.5	7.0	6.5	6.5	
-C	6.9	7.0	8.0	7.4	8.0	4.0	7.2
TEXTURE-A/1		L	L	SiC	SiCL	CL	CL
-B/2		SiCL	CL	SiCL	SCL	SiCL	
-C/3		L	CL	SiC	SiCL	C	SL
COARSE FRAGMENTS-B(%)	0.2	0	1	0	0	0	0
SEEPAGE(*) & MOTTLING(CM)					6		
ROOTING DEPTH(CM)	75.0	50	70	100	60	95	75
VEGETATION :							
ASSOCIATION		A6	A1	A6	A6	A6	A6
STAND AGE(YR)	58.7	66	43	66	59	70	48
CANOPY HEIGHT(M)	20.3	24	18	18	20	24	18
MEAN ANNUAL INCREMENT	5.0	5.7	6.5	4.0	3.9		4.8
STRATA COVERAGE(%)-A	46.7	65	25	55	50	40	45
-B	50.8	30	40	70	35	80	50
-C	36.7	20	25	25	55	40	55
-G	3.5	10	1	3	1	3	3
-D	1.3	1	4	1	1	0	1
-L	0.5	0	0	1	1	0	1
SURFACE SUBST(%)-DEAD WOOD	4.8	1	5	10	5	3	5
-BEDROCK	0.0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0
-ORGANIC	95.2	99	95	90	95	97	95
-OPEN WATER	0.0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	196.0			104	270		214
-GRAMINOIDS	11.3			9	0		25
-BROWSE	35.7			10	58		39

ENVIRONMENT/SOILS-VEGETATION TABLES

RESOURCE INVENTORY

TITLE : Bw BETULA PAPYRIFERA COMMUNITY

TABLE 8

	MEAN	4K
PLOT NUMBER		R104
TOWNSHIP		101
RANGE & MERIDIAN		01W6
MAPSHEET		84E 16
PHYSIOGRAPHIC SUBREGION		CP
GEOMORPHIC SYSTEM		
ECOSECTION		M01
ELEVATION(MASL)	457.0	457
SLOPE(%)	0.0	0
ASPECT(DEG)		
ENVIRONMENT/SOILS :		
ECOLOGICAL MOISTURE REGIME		M
NUTRIENT REGIME		PM
OVERLYING MATERIAL		GL
UNDERLYING MATERIAL		
EROSION/DEPOSITION		
SOIL SUBGROUP		O
SOIL GREAT GROUP		G
SOIL DRAINAGE		I
SOLUM THICKNESS(CM)	33.0	33
TYPE & DEPTH TO RESTRICT(CM)		
THICKNESS LFH(CM)	9.0	9
pH-LFH	0.0	
-A	4.5	4.5
-B	8.0	8.0
-C	8.0	8.0
TEXTURE-A/1		S1
-B/2		S1L
-C/3		S1CL
COARSE FRAGMENTS-B(%)	0.0	0
SEEPAGE(*) & MOTTLING(CM)		12
ROOTING DEPTH(CM)	60.0	60
VEGETATION :		
ASSOCIATION		Bw
STAND AGE(YR)	45.0	45
CANOPY HEIGHT(M)	14.0	14
MEAN ANNUAL INCREMENT	3.0	3.0
STRATA COVERAGE(%)-A	80.0	80
-B	7.0	7
-C	40.0	40
-G	5.0	5
-D	1.0	1
-L	1.0	1
SURFACE SUBST(%)-DEAD WOOD	1.0	1
-BEDROCK	0.0	0
-STONES	0.0	0
-MIN.SOIL	0.0	0
-ORGANIC	99.0	99
-OPEN WATER	0.0	0
BIOMASS(KG/HA)-FORBS	212.0	212
-GRAMINOIDS	146.0	146
-BROWSE	1.0	1

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW PB1 POPULUS BALSAMIFERA/CORNUS STOLONIFERA TABLE 9

		4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R040	R041	R101	R079	R036	R037
TOWNSHIP		102	102	101	94	101	102
RANGE & MERIDIAN		01W6	01W6	22W5	23W5	02W6	01W6
MAPSHEET		84E	84E	84F	84F	84E	84E
		16	16	12	3	16	16
PHYSIOGRAPHIC SUBREGION					CHU	CP	CP
GEOMORPHIC SYSTEM							
ECOSECTION		F1	F1	F3	MF1	F3	GLM1
ELEVATION(MASL)	459.3	428	427	400	550	488	463
SLOPE(%)	2.5	0	1	6	5	1	2
ASPECT(DEG)				225	110	320	
ENVIRONMENT/SOILS :							
ECOLOGICAL MOISTURE REGIME		M	M	M	SHG	HG	HG
NUTRIENT REGIME		M	M	PM	M	PM	M
OVERLYING MATERIAL		F	F	Ft	Ft	F1	Lv
UNDERLYING MATERIAL							GFu
EROSION/DEPOSITION							
SOIL SUBGROUP		O	O	O	CU	GLCU	O
SOIL GREAT GROUP		R	R	R	R	R	LG
SOIL DRAINAGE		W	W	W	MW	I	P
SOLUM THICKNESS(CM)	25.6	0	0	37		41	50
TYPE & DEPTH TO RESTRICT(CM)							W 60
THICKNESS LFH(CM)	6.5	2	2	8	7	10	10
pH-LFH	0.0						
-A	5.4				5.6	5.3	
-B	6.6						6.6
-C	6.7	7.0	8.0	8.0	5.2	5.3	6.5
TEXTURE-A/1					CL	SiCL	
-B/2		SiCL					C
-C/3		SCL	SCL	S	C	SiC	SCL
COARSE FRAGMENTS-B(%)	0.0			0		0	0
SEEPAGE(*) & MOTTLING(CM)							0
ROOTING DEPTH(CM)	69.0			75	110	41	50
VEGETATION :							
ASSOCIATION		PB1	PB1	PB1	PB1	PB1	PB1
STAND AGE(YR)	57.3	50	61	45	63	81	44
CANOPY HEIGHT(M)	19.7	17	17	21	21	26	16
MEAN ANNUAL INCREMENT	4.1	4.5	4.0	4.6	2.5	6.4	2.8
STRATA COVERAGE(%)-A	55.0	90	40	45	45	35	75
-B	45.8	15	55	80	5	95	25
-C	32.7	40	1	40	85	15	15
-G	1.0	1	0	2	0	1	2
-D	0.7	0	0	1	1	1	1
-L	0.2	0	0	0	0	0	1
SURFACE SUBST(%)-DEAD WOOD	8.7	5	5	2	10	20	10
-BEDROCK	0.0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0
-ORGANIC	91.3	95	95	98	90	80	90
-OPEN WATER	0.0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	191.8	59	6	289	529		76
-GRAMINOIDS	3.0	6	0	9	0		0
-BROWSE	34.3	11	19	9		98	

TITLE : MW SwA PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA SPP. TABLE 10

		4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R086	R102	R056	R119	R058	R031	R120	R097	R069	R078	R128
TOWNSHIP		97	102	94	96	94	101	95	99	96	94	99
RANGE & MERIDIAN		23W5	01W6	23W5	22W5	23W5	25W5	23W5	22W5	21W5	23W5	21W5
MAPSHEET		84F	84E	84F	84F	84F	84F	84F	84F	84F	84F	84F
		5	16	4	6	4	13	4	11	6	3	11
PHYSIOGRAPHIC SUBREGION		CHU	CP	CHU	CHU	PRL	CP	PRL	HLP	CHU	CHU	CHU
GEOMORPHIC SYSTEM												
ECOSECTION		M2	M2	MX1	GL2	GL1	GLM1	GL3	GL1	GL2	MF1	GL3
ELEVATION(MASL)	570.4	755	440	607	640	550	464	587	515	543	548	625
SLOPE(%)	2.1	4	0	3	8	3	1	0	0	2	2	0
ASPECT(DEG)		360		210	160	232				74	45	
ENVIRONMENT/SOILS :												
ECOLOGICAL MOISTURE REGIME		M	M	M	M	SHG	M	M	SHG	SHG	SHG	HG
NUTRIENT REGIME		M	M	M	M	M	M	M	M	M	PM	PM
OVERLYING MATERIAL		Mv	M	Mi	Mm	Mu	GLv	GL	GLu	LTu	GLu	F1
UNDERLYING MATERIAL		X					M					
EROSION/DEPOSITION												
SOIL SUBGROUP		O	GL	O	D	GLG	BR	GLG	HU	GLSZ	GLSZ	GLCU
SOIL GREAT GROUP		GL	GL	GL	GL	SO	GL	SS	LG	GL	GL	R
SOIL DRAINAGE		W	I	MW	W	MW	MW	I	I	I	I	P
SOLUM THICKNESS(CM)	49.3	63	46	55	60	67	34	45	59	61	45	5
TYPE & DEPTH TO RESTRICT(CM)												W100
THICKNESS LFH(CM)	6.8	6	3	6	7	8	7	9	4	11	5	9
pH-LFH	0.0											
-A	4.9	5.5	6.0	4.1	5.5	3.9	3.5	4.5	7.0	3.7	3.6	6.5
-B	5.1	5.0	7.0	3.6	6.0	4.7	3.5	4.5	8.0	4.8	3.7	
-C	7.1	8.0	8.0	7.4	7.0	7.8	4.3	6.5	8.0	6.1	6.8	8.0
TEXTURE-A/1		SiL	SiL	SiL	L	SiC	L	CL	L	C	SiCL	LS
-B/2		SiCL	SiC	C	CL	C	C	SiCL	SiC	HC	C	
-C/3		SiC	SiC	C	CL	HC	C	SiC	SiCL	HC	C	LS
COARSE FRAGMENTS-B(%)	2.0	10	2	1	5	0	0	0	0	1	1	
SEEPAGE(•) & MOTTLING(CM)							•	1	23	6	• 22	• 5
ROOTING DEPTH(CM)	67.3	99	55	50	50	80	60	50	60	61	75	100
VEGETATION :												
ASSOCIATION		SwA	SwA	SwA	SwA	SwA	SwA	SwA	SwA	SwA	SwA	SwA
STAND AGE(YR)	103.4	84	74	134	134	100	90	64	85	154	133	85
CANOPY HEIGHT(M)	22.1	25	15	28	28	21	19	17	21	24	21	24
MEAN ANNUAL INCREMENT	3.1	5.6	2.6	1.1	4.1	3.9	2.7	3.4	3.6		2.5	1.9
STRATA COVERAGE(%)-A	56.4	70	50	50	25	70	65	50	95	60	60	25
-B	19.3	25	5	30	40	20	30	13	7	25	15	2
-C	28.2	40	3	20	30	7	25	40	25	20	10	90
-G	3.7	1	1	25	1	1	2	1	0	1	7	1
-D	39.5	40	50	70	4	0	15	60	10	95	30	60
-L	1.0	1	1	1	1	1	1	1	1	1	1	1
SURFACE SUBST(%)-DEAD WOOD	9.6	10	0	2	3	10	8	15	10	10	8	30
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	90.4	90	100	98	97	90	92	85	90	90	92	70
-OPEN WATER	0.0	0	0	0	0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	83.6	141	10	187		6	92		66	131	36	
-GRAMINOIDS	17.3	0	4	53		9	2		0	16	54	
-BROWSE	1.5	4		1		1			0			

ENVIRONMENT/SOILS-VEGETATION TABLES

RESOURCE INVENTORY

TABLE 11

TITLE : MW Sw PICEA GLAUCA/HYLOCOMIUM SPLENDENS-PLEUROZIUM SCHREBERI

		4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R025	R026	R027	R084	R136	R123	R010	R061	R107	R135	R118	R133	R127	R083
TOWNSHIP		101	101	101	99	103	97	94	94	101	100	95	100	99	99
RANGE & MERIDIAN		24W5	24W5	24W5	22W5	02W5	21W5	23W5	22W5	23W5	24W5	23W5	24W5	22W5	22W5
MAPSHEET		84F	84F	84F	84F	84E	84F	84F	84F	84F	84F	84F	84F	84F	84F
		13	13	13	11	16	6	4	3	13	12	4	12	12	11
PHYSIOGRAPHIC SUBREGION		HLP	HLP	HLP	HLP		CHU	PRL	PRL	HLP	CHU		CHU	CHU	HLP
GEOMORPHIC SYSTEM															
ECOSECTION		GL1	GL3	GL3	F1	F1	GL2	GL1	GL1	GL3	M3	F2	M3	CX1	FGL1
ELEVATION(MASL)	528.9	430	420	435	480	440	580	442	495	415	755	552	735	720	505
SLOPE(%)	5.6	0	1	2	5	1	5	4	2	2	6	13	15	20	3
ASPECT(DEG)			360	100	325	40	107	136		10	340	206	75	80	292
ENVIRONMENT/SOILS :															
ECOLOGICAL MOISTURE REGIME		M	M	HG	M	SHG	M	M	HG	HG	M	SHG	M	M	HG
NUTRIENT REGIME		PM	PM	PM	M	M	SM	M	SM	SM	SM	PM	SM	M	PM
OVERLYING MATERIAL		GFu	GFv	GFu	Ft	F1	GLv	GL	LT1	Ob	Mv	C	Mm	Cv	Ov
UNDERLYING MATERIAL		GLu	M				Xm			GL	X1			X1r	GLu
EROSION/DEPOSITION															
SOIL SUBGROUP		GL	GLCU	O	O	O	E	O	O	THU	E	CU	O	E	R
SOIL GREAT GROUP		EB	R	HG	R	G	DYB	GL	LG	M	DYB	R	DYB	DYB	HG
SOIL DRAINAGE		W	MW	I	MW	P	W	MW	P	P	W	MW	W	W	P
SOLUM THICKNESS(CM)	47.7	125	30	37	5	38	70	39	57		54		46	59	12
TYPE & DEPTH TO RESTRICT(CM)											L 37				
THICKNESS LFH(CM)	13.2	8	4	11	20	27	6	8	9	18	6	10	10	9	39
pH-LFH	5.8					6.0				6.0					5.5
-A	5.0	5.3	5.5	4.6	4.5	6.4	4.0	5.5	3.4		4.1	5.5		3.8	8.0
-B	5.0	5.8		6.9		6.8	4.0	4.7	3.9		3.8		4.5	4.2	
-C	6.2	6.9	6.3	5.8	7.3	7.4	4.0	7.2		8.0	3.6	8.0	4.5	3.6	8.0
TEXTURE-A/1		C	CL	C	SIL	C	L	SIL	C		SL	SIC		SL	L
-B/2		C		CL		SIC	CL	HC	HC		L		L	SCL	
-C/3		C	HC	SCL	SIC	HC	CL	C		SICL	SCL	SICL	L	CL	CL
COARSE FRAGMENTS-B(%)	1.5	0	0	0		1	0	1	2		4		5	2	
SEEPAGE(*) & MOTTLING(CM)					49				* 0	*110					0
ROOTING DEPTH(CM)	47.0	125	35	32		30	40	75	45		35	75	25	35	12
VEGETATION :															
ASSOCIATION		Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw
STAND AGE(YR)	118.2	77	90	121	98	71	147	74	133	200	166	140	89	84	165
CANOPY HEIGHT(M)	24.1	22	20	25	25	19	27	19	20	29	28	29	21	21	32
MEAN ANNUAL INCREMENT	4.3	4.9	5.5	5.1	7.3	4.0	2.5	7.7	3.0	3.3	3.0	3.6	3.8	4.1	2.6
STRATA COVERAGE(%)-A	51.4	50	65	30	75	45	50	40	45	40	30	45	65	55	85
-B	7.3	2	1	5	1	1	10	10	7	10	10	12	1	2	30
-C	22.5	3	1	90	2	1	15	15	5	95	20	50	1	2	15
-G	1.4	0	0	0	0	1	0	2	1	1	5	5	2	0	2
-D	78.9	80	90	90	95	15	97	40	80	50	95	99	95	98	80
-L	0.4	1	0	0	0	1	1	0	1	0	0	1	1	0	0
SURFACE SUBST(%)-DEAD WOOD	10.0	1	20	20	15	10	4	20	15	8	5	5	4	10	3
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	90.0	99	80	80	85	90	96	80	85	92	95	95	96	90	97
-OPEN WATER	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	81.1	16	9		0			69	19	313					142
-GRAMINOIDS	34.9	0	0		0			40	32	170					2
-BROWSE	0.7		0					2							0

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW PL1 PINUS CONTORTA/ALNUS CRISPA TABLE 12

		4K	4K	4K
PLOT NUMBER	MEAN	RO89	RO11	RO91
TOWNSHIP		97	96	97
RANGE & MERIDIAN		22W5	22W5	22W5
MAPSHEET		84F	84F	84F
		5	5	5
PHYSIOGRAPHIC SUBREGION		CHU	CHU	CHU
GEOMORPHIC SYSTEM				
ECOSECTION		GFX1	M2	GFX1
ELEVATION(MASL)	666.7	700	600	700
SLOPE(%)	5.3	6	2	8
ASPECT(DEG)		243	180	238
ENVIRONMENT/SOILS :				
ECOLOGICAL MOISTURE REGIME		SM	SM	SM
NUTRIENT REGIME		SM	SM	SM
OVERLYING MATERIAL		GFv	Mu	GFv
UNDERLYING MATERIAL		Xr		Xr
EROSION/DEPOSITION				
SOIL SUBGROUP		E	BR	E
SOIL GREAT GROUP		EB	GL	EB
SOIL DRAINAGE		R	W	R
SOLUM THICKNESS(CM)	41.3	24	55	45
TYPE & DEPTH TO RESTRICT(CM)				L 45
THICKNESS LFH(CM)	6.3	8	4	7
pH-LFH	0.0			
-A	4.4	3.6	5.5	4.0
-B	4.8	4.4	4.1	6.0
-C	5.4	5.1	5.2	6.0
TEXTURE-A/1		SL		LS
-B/2		SL	C	LS
-C/3		LS	CL	S
COARSE FRAGMENTS-B(%)	8.3	5	20	0
SEEPAGE(*) & MOTTLING(CM)				
ROOTING DEPTH(CM)	36.3	12	32	65
VEGETATION :				
ASSOCIATION		PL1	PL1	PL1
STAND AGE(YR)	57.0	58	57	56
CANOPY HEIGHT(M)	16.7	16	15	19
MEAN ANNUAL INCREMENT	3.6	4.7	3.1	3.0
STRATA COVERAGE(%)-A	45.0	40	55	40
-B	40.0	50	35	35
-C	33.3	5	55	40
-G	1.0	1	1	1
-D	73.3	60	90	70
-L	0.7	0	1	1
SURFACE SUBST(%)-DEAD WOOD	10.7	20	2	10
-BEDROCK	0.0	0	0	0
-STONES	0.0	0	0	0
-MIN.SOIL	0.0	0	0	0
-ORGANIC	89.3	80	98	90
-OPEN WATER	0.0	0	0	0
BIOMASS(KG/HA)-FORBS	48.0	19	25	100
-GRAMINOIDS	6.3	9	1	9
-BROWSE	0.5		0	1

ENVIRONMENT/SOILS-VEGETATION TABLES

RESOURCE INVENTORY

TITLE : MW PlSb PINUS CONTORTA-PICEA MARIANA/LEDUM GROENLANDICUM/FEATHERMOSS

TABLE 13

		4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R100	R092	R094	R141	R001
TOWNSHIP		97	96	97	101	99
RANGE & MERIDIAN		22W5	22W5	22W5	02W6	21W5
MAPSHEET		84F	84F	84F	84E	84F
		5	5	5	16	11
PHYSIOGRAPHIC SUBREGION		CHU	CHU	CHU	CHU	CHU
GEOMORPHIC SYSTEM						
ECOSECTION		GF1	GF1	GFX1	GF01	MX1
ELEVATION(MASL)	714.4	689	730	708	710	735
SLOPE(%)	1.6	0	2	2	2	2
ASPECT(DEG)			0	145	360	294
ENVIRONMENT/SOILS :						
ECOLOGICAL MOISTURE REGIME		SX	SM	M	M	M
NUTRIENT REGIME		SM	SM	M	SM	SM
OVERLYING MATERIAL		GFv	GFu	GFu	Fu	Mb
UNDERLYING MATERIAL		M				X
EROSION/DEPOSITION						
SOIL SUBGROUP		E	BR	O	GL	E
SOIL GREAT GROUP		EB	GL	EB	DYB	DYB
SOIL DRAINAGE		W	MW	MW	MW	MW
SOLUM THICKNESS(CM)	42.6	41	57	42	37	36
TYPE & DEPTH TO RESTRICT(CM)		K 41				W 65
THICKNESS LFH(CM)	4.6	3	5	3	3	9
pH-LFH	0.0					
-A	4.5	4.5	4.5	5.5		3.4
-B	5.0	5.5	5.5	5.5	4.5	3.9
-C	6.0	6.0	6.5	8.0	5.5	3.8
TEXTURE-A/1		SI	SIL	SL		SIL
-B/2		SIL	SCL	LS	SIL	L
-C/3		SCL	SC	SCL	SIL	SCL
COARSE FRAGMENTS-B(%)	2.6	2	5	5	0	1
SEEPAGE(*) & MOTTLING(CM)						*
ROOTING DEPTH(CM)	42.6	41	57	25	20	70
VEGETATION :						
ASSOCIATION		PLSb	PLSb	PLSb	PLSb	PLSb
STAND AGE(YR)	54.5		47	51	41	79
CANOPY HEIGHT(M)	15.0	18	12	15	10	20
MEAN ANNUAL INCREMENT	2.5		2.5	2.0	1.2	4.2
STRATA COVERAGE(%)-A	52.0	70	95	30	25	40
-B	34.6	8	20	40	70	35
-C	14.8	5	4	25	10	30
-G	1.8	1	1	1	1	5
-D	47.2	70	5	70	1	90
-L	7.8	5	16	5	3	10
SURFACE SUBST(%)-DEAD WOOD	2.8	3	5	2	3	1
-BEDROCK	0.0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0
-ORGANIC	97.2	97	95	98	97	99
-OPEN WATER	0.0	0	0	0	0	0
BIOMASS(KG/HA)-FORBS	20.0	0	9	38		33
-GRAMINOIDS	6.3	0	4	21		0
-BROWSE	0.0		0			0

TITLE : MW PLA PINUS CONTORTA-POPULUS TREMULOIDES TABLE 14

		4K	4K
PLOT NUMBER	MEAN	R018	R070
TOWNSHIP		98	96
RANGE & MERIDIAN		22W5	22W5
MAPSHEET		84F	84F
		6	6
PHYSIOGRAPHIC SUBREGION		CHU	CHU
GEOMORPHIC SYSTEM			
ECOSECTION		MGF2	GL1
ELEVATION(MASL)	601.0	650	552
SLOPE(%)	2.0	1	3
ASPECT(DEG)		90	116
ENVIRONMENT/SOILS :			
ECOLOGICAL MOISTURE REGIME		HG	SHG
NUTRIENT REGIME		M	M
OVERLYING MATERIAL		Mv	LTu
UNDERLYING MATERIAL		Xu	
EROSION/DEPOSITION			
SOIL SUBGROUP		O	GLSZ
SOIL GREAT GROUP		G	GL
SOIL DRAINAGE		I	I
SOLUM THICKNESS(CM)	75.5	120	31
TYPE & DEPTH TO RESTRICT(CM)		W100	
THICKNESS LFH(CM)	3.5	3	4
pH-LFH	0.0		
-A	5.4	6.5	4.3
-B	5.6	7.0	4.1
-C	6.6	8.0	5.3
TEXTURE-A/1		CL	CL
-B/2		LS	C
-C/3		SC	C
COARSE FRAGMENTS-B(%)	2.5	0	5
SEEPAGE(*) & MOTTLING(CM)		* 7	11
ROOTING DEPTH(CM)	80.0	100	60
VEGETATION :			
ASSOCIATION		PLA	PLA
STAND AGE(YR)	48.0	52	44
CANOPY HEIGHT(M)	19.0	20	18
MEAN ANNUAL INCREMENT	4.4	4.2	4.7
STRATA COVERAGE(%)-A	47.5	45	50
-B	17.5	20	15
-C	12.5	15	10
-G	8.0	1	15
-D	34.0	3	65
-L	0.5	0	1
SURFACE SUBST(%)-DEAD WOOD	7.5	10	5
-BEDROCK	0.0	0	0
-STONES	0.0	0	0
-MIN.SOIL	0.0	0	0
-ORGANIC	92.5	90	95
-OPEN WATER	0.0	0	0
BIOMASS(KG/HA)-FORBS	117.0	176	58
-GRAMINOIDS	42.0	24	60
-BROWSE	1.0	1	

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW Sb PICEA MARIANA/LEDUM GROENLANDICUM/MOSS TABLE 15

		4K	4K	4K	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER	MEAN	R085	R043	R024	R110	R005	R003	R105	R087	R129	R090	R095
TOWNSHIP		98	102	101	102	102	99	101	97	99	96	99
RANGE & MERIDIAN		22W5	25W5	23W5	23W5	03W6	22W5	23W5	23W5	23W5	22W5	22W5
MAPSHEET		84F 11	84F 13	84F 13	84F 13	84E 16	84F 11	84F 12	84F 5	84F 12	84F 5	84F 11
PHYSIOGRAPHIC SUBREGION		HLP	CP	HLP	HLP	CP	HLP	HLP	CHU	CHU		HLP
GEOMORPHIC SYSTEM												
ECOSECTION		OGL1	MO1	GLO2	OGL2	OM1	GL1	GLO1	GFX1	M3	F2	OGL1
ELEVATION(MASL)	530.5	520	433	411	450	490	490	420	695	720	712	495
SLOPE(%)	2.4	1		0	0	0	2	2	4	4	1	10
ASPECT(DEG)		180						30	270	312		255
ENVIRONMENT/SOILS :												
ECOLOGICAL MOISTURE REGIME		HG	HG	SHD	SHD	HG	SHD	HG	SHD	HG	HD	SHG
NUTRIENT REGIME		SM	O	SM	SM	SM	SM	SM	M	SM	M	SM
OVERLYING MATERIAL		Ov	O	Ob	Oh	Ov	Ovb	Ov	Ov	Oh	Ov	GLi
UNDERLYING MATERIAL		GL		GL		GL	GL	GL	Fi	F	GF1	
EROSION/DEPOSITION												
SOIL SUBGROUP		TF		T	F	R	T	TFI	TF	FI	T	O
SOIL GREAT GROUP		M	M	M	M	G	M	M	M	OC	F	GL
SOIL DRAINAGE		P	P	VP	VP	VP	VP	P	P	P	VP	MW
SOLUM THICKNESS(CM)	73.0	55			125	32	100	63		65		71
TYPE & DEPTH TO RESTRICT(CM)			W 0	W 5		W 40	W 30		W 44	P 36		
THICKNESS LFH(CM)	64.3	5.5		99	125	32	100	63	44	65	95	14
pH-LFH	5.5				4.5		5.3	5.5		4.5	7.5	
-A	5.8					8.0			5.5			4.0
-B	5.0											5.0
-C	6.8	6.5		7.6		7.1	4.0	7.0	6.5		8.0	7.5
TEXTURE-A/1				C								SiL
-B/2												C
-C/3		SiL		C		C	C	SiC	S		S	C
COARSE FRAGMENTS-B(%)	0.5										0	1
SEEPAGE(*) & MOTTLING(CM)		* 55				32		63	*			
ROOTING DEPTH(CM)	33.5								17			50
VEGETATION :												
ASSOCIATION		Sb	Sb	Sb	Sb	Sb	Sb	Sb	Sb	Sb	Sb	Sb
STAND AGE(YR)	89.5	84	34				56	135		82		146
CANOPY HEIGHT(M)	10.3	7	8	8			5	15		6		23
MEAN ANNUAL INCREMENT	1.0	0.1	0.2				0.4	1.3				3.1
STRATA COVERAGE(%)-A	19.6	20	5	10	1	0	30	40	0	20	15	75
-B	47.3	75	50	80	45	40	70	10	65	40	45	0
-C	13.8	20	3	0	25	15	25	50	2	1	10	1
-G	3.9	1	0	1	7	1	0	1	2	0	30	0
-D	56.6	15	15	20	85	5	35	90	99	99	65	95
-L	12.7	60	0	5	20	0	50	1	1	2	0	1
SURFACE SUBST(%)-DEAD WOOD	4.2	1	1	1	2	15	5	10	2	2	2	5
-BEDROCK	0.0	0	0	0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0	0	0	0
-ORGANIC	95.6	99	99	97	98	85	95	90	98	98	98	95
-OPEN WATER	0.6	0	0	2	0	0	0	0	0	0	5	0
BIOMASS(KG/HA)-FORBS	107.9	162	28	100	178	131	70	265	59		86	0
-GRAMINOIDS	49.1	5	0	22	14	6	0	6	60		378	0
-BROWSE	22.7		0			23					45	

TITLE : MW WL WILLOW SHRUBLANDS - DEPRESSIONS AND LEVEL AREAS TABLE 16

	MEAN	4K	4K	4K	4K	4K	4K	4K	4K
PLOT NUMBER		R006	R044	R106	R067	R117	R099	R014	R049
TOWNSHIP		102	102	102	95	101	100	99	102
RANGE & MERIDIAN		03W6	25W5	23W5	22W5	23W5	23W5	22W5	01W6
MAPSHEET		84E 16	84F 13	84F 13	84F 5	84F 13	84F 12	84F 12	84E 16
PHYSIOGRAPHIC SUBREGION		CP	CP	HLP	CHU	HLP	HLP	HLP	CP
GEOMORPHIC SYSTEM									
ECOSECTION		OM1	MO1	O2	GFO1	OGL2	OF1	GL1	MO1
ELEVATION(MASL)	477.1	490	427	435	630	425	460	505	445
SLOPE(%)	1.1	0	2	2	2	0	2	1	0
ASPECT(DEG)			252	150	2				
ENVIRONMENT/SOILS :									
ECOLOGICAL MOISTURE REGIME		SHD	SHD	SHD	SHD	SHD	HG	HD	HG
NUTRIENT REGIME		M	M	M	M	M	PM	PM	PM
OVERLYING MATERIAL		Ov	O1	Os	Ov	Oh	GLu	Ov	Ov
UNDERLYING MATERIAL		Lu			Mu			Lu	Mu
EROSION/DEPOSITION									
SOIL SUBGROUP		T		ME	R	TY	R	T	O
SOIL GREAT GROUP		H	M	OC	G	M	HG	H	G
SOIL DRAINAGE		VP	VP	VP	P	VP	P	VP	P
SOLUM THICKNESS(CM)	48.5	85	20	65			22	69	30
TYPE & DEPTH TO RESTRICT(CM)		W 20	W 0	P 50				W 30	
THICKNESS LFH(CM)	40.2	44		65	15		22	69	26
pH-LFH	6.4	6.0	6.0	5.9	7.0			5.5	8.0
-A	7.0						7.0		
-B	7.2								7.2
-C	6.9	6.0			7.0		8.0	5.7	7.6
TEXTURE-A/1		CL					C		
-B/2									C
-C/3		CL			SiCL		C	C	C
COARSE FRAGMENTS-B(%)	0.5				0				1
SEEPAGE(*) & MOTTLING(CM)		44			0		0		
ROOTING DEPTH(CM)	36.7			50			30		30
VEGETATION :									
ASSOCIATION		WL	WL	WL	WL	WL	WL	WL	WL
STAND AGE(YR)	41.0						41		
CANOPY HEIGHT(M)	9.5						11	8	
MEAN ANNUAL INCREMENT	0.0								
STRATA COVERAGE(%)-A	46.2			0		1	80	70	80
-B	53.3	99	60	70	90	75	25	5	2
-C	12.9	10	5	3	15	5	40	20	5
-G	23.6	50	25	20	7	18	7	60	2
-D	20.0	20	40	10	3	80	1	1	5
-L	0.6	1	0	1	1	1	0	0	1
SURFACE SUBST(%)-DEAD WOOD	5.1	20	0	2	10	1	1	5	2
-BEDROCK	0.0	0	0	0	0	0	0	0	0
-STONES	0.0	0	0	0	0	0	0	0	0
-MIN.SOIL	0.0	0	0	0	0	0	0	0	0
-ORGANIC	93.4	80	98	98	90	99	99	85	98
-OPEN WATER	1.5	0	2	0	0	0	0	10	0
BIOMASS(KG/HA)-FORBS	152.6	168	27	18	241		228	235	151
-GRAMINOIDS	128.4	119	111	271	46		12	328	12
-BROWSE	43.2		40	69	87		19		1

ENVIRONMENT/SOILS-VEGETATION TABLES

RESOURCE INVENTORY

TITLE : MW Ws WILLOW- SEEPAGE AREAS

TABLE 17

		4K	4K	4K
PLOT NUMBER	MEAN	R034	R050	R077
TOWNSHIP		101	102	94
RANGE & MERIDIAN		01W6	01W6	23W5
MAPSHEET		84E	84E	84F
		16	16	3
PHYSIOGRAPHIC SUBREGION		CPU	CP	CHU
GEOMORPHIC SYSTEM				
ECOSECTION		FM1	MO1	MF1
ELEVATION(MASL)	523.0	541	460	568
SLOPE(%)	4.7	10	3	1
ASPECT(DEG)		150	140	
ENVIRONMENT/SOILS :				
ECOLOGICAL MOISTURE REGIME		HG	HG	HG
NUTRIENT REGIME		PM	PM	PM
OVERLYING MATERIAL		Fv	Fu	Ov
UNDERLYING MATERIAL		Mi		Fu
EROSION/DEPOSITION				
SOIL SUBGROUP		R	R	R
SOIL GREAT GROUP		HG	G	HG
SOIL DRAINAGE		P	P	P
SOLUM THICKNESS(CM)	10.0	10		10
TYPE & DEPTH TO RESTRICT(CM)		W 60		W 0
THICKNESS LFH(CM)	19.3	15	5	38
pH-LFH	7.0			7.0
-A	6.1	6.5	5.5	6.3
-B	0.0			
-C	6.8	7.1	6.1	7.3
TEXTURE-A/1		L		C
-B/2			SiCL	
-C/3		SiC	SiCL	SiC
COARSE FRAGMENTS-B(%)	0.0			
SEEPAGE(*) & MOTTLING(CM)		* 10	0	* 10
ROOTING DEPTH(CM)	65.0	60	70	
VEGETATION :				
ASSOCIATION		WS	WS	WS
STAND AGE(YR)	0.0			
CANOPY HEIGHT(M)	16.0	15	15	18
MEAN ANNUAL INCREMENT	0.0			
STRATA COVERAGE(%)-A	43.3	55	65	10
-B	75.0	55	85	85
-C	43.3	50	45	35
-G	8.3	5	5	15
-D	0.7	1	0	1
-L	0.3	0	0	1
SURFACE SUBST(%)-DEAD WOOD	13.3	10	25	5
-BEDROCK	0.0	0	0	0
-STONES	0.0	0	0	0
-MIN.SOIL	0.0	0	0	0
-ORGANIC	86.7	90	75	95
-OPEN WATER	0.0	0	0	0
BIOMASS(KG/HA)-FORBS	344.7	216	544	274
-GRAMINOIDS	33.7	26	52	23
-BROWSE	64.0	49	79	

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW C SEDGE FEN TABLE 18

		4K	4K
PLOT NUMBER	MEAN	R098	R111
TOWNSHIP		97	102
RANGE & MERIDIAN		22W5	23W5
MAPSHEET		84F 5	84F 13
PHYSIOGRAPHIC SUBREGION		CHU	HLP
GEOMORPHIC SYSTEM			
ECOSECTION		GFX1	OGL2
ELEVATION(MASL)	560.0	695	425
SLOPE(%)	0.0	0	0
ASPECT(DEG)			
ENVIRONMENT/SOILS :			
ECOLOGICAL MOISTURE REGIME		HD	HD
NUTRIENT REGIME		M	M
OVERLYING MATERIAL		O	Ov
UNDERLYING MATERIAL			GL
EROSION/DEPOSITION			
SOIL SUBGROUP		TY	T
SOIL GREAT GROUP		F	M
SOIL DRAINAGE		VP	VP
SOLUM THICKNESS(CM)	120.0		120
TYPE & DEPTH TO RESTRICT(CM)			
THICKNESS LFH(CM)	110.0	100	120
pH-LFH	5.1	4.0	6.2
-A	0.0		
-B	0.0		
-C	0.0		
TEXTURE-A/1			
-B/2			
-C/3			SICL
COARSE FRAGMENTS-B(%)	0.0		
SEEPAGE(*) & MOTTLING(CM)			
ROOTING DEPTH(CM)	0.0		
VEGETATION :			
ASSOCIATION		C	C
STAND AGE(YR)	0.0		
CANOPY HEIGHT(M)	0.0		
MEAN ANNUAL INCREMENT	0.0		
STRATA COVERAGE(%)-A	0.0	0	0
-B	3.0	5	1
-C	6.5	3	10
-G	80.0	70	90
-D	15.5	30	1
-L	0.0	0	0
SURFACE SUBST(%)-DEAD WOOD	0.0	0	0
-BEDROCK	0.0	0	0
-STONES	0.0	0	0
-MIN.SOIL	0.0	0	0
-ORGANIC	92.5	90	95
-OPEN WATER	7.5	10	5
BIOMASS(KG/HA)-FORBS	141.0	20	262
-GRAMINOIDS	1339.5	522	2157
-BROWSE	0.0	0	0

ENVIRONMENT/SOILS-VEGETATION TABLES RESOURCE INVENTORY

TITLE : MW G GRASSLAND - STEEP SOUTHFACING SLOPES TABLE 19

		4K
PLOT NUMBER	MEAN	R075
TOWNSHIP		94
RANGE & MERIDIAN		23W5
MAPSHEET		84F
		3
PHYSIOGRAPHIC SUBREGION		
GEOMORPHIC SYSTEM		
ECOSECTION		F2
ELEVATION(MASL)	470.0	470
SLOPE(%)	45.0	45
ASPECT(DEG)		210
ENVIRONMENT/SOILS :		
ECOLOGICAL MOISTURE REGIME		SX
NUTRIENT REGIME		PM
OVERLYING MATERIAL		C1
UNDERLYING MATERIAL		
EROSION/DEPOSITION		
SOIL SUBGROUP		O
SOIL GREAT GROUP		B
SOIL DRAINAGE		R
SOLUM THICKNESS(CM)	52.0	52
TYPE & DEPTH TO RESTRICT(CM)		
THICKNESS LFH(CM)	0.0	
pH-LFH	0.0	
-A	6.3	6.3
-B	7.6	7.6
-C	7.8	7.8
TEXTURE-A/1		CL
-B/2		C
-C/3		C
COARSE FRAGMENTS-B(%)	5.0	5
SEEPAGE(*) & MOTTLING(CM)		
ROOTING DEPTH(CM)	45.0	45
VEGETATION :		
ASSOCIATION		G
STAND AGE(YR)	0.0	
CANOPY HEIGHT(M)	0.0	
MEAN ANNUAL INCREMENT	0.0	
STRATA COVERAGE(%)-A	0.0	0
-B	25.0	25
-C	5.0	5
-G	70.0	70
-D	0.0	0
-L	2.0	2
SURFACE SUBST(%)-DEAD WOOD	0.0	0
-BEDROCK	0.0	0
-STONES	1.0	1
-MIN.SOIL	10.0	10
-ORGANIC	89.0	89
-OPEN WATER	0.0	0
BIOMASS(KG/HA)-FORBS	63.0	63
-GRAMINOIDS	574.0	574
-BROWSE	0.0	

```
------------------------------------------------ V E G E T A T I O N   T A B L E S ------------------------------------------------

                                               RESOURCE INVENTORY

                                               EDMONTON, ALBERTA

                                          22:51:47     APR 24, 1985
```

```
NO CODING ERRORS IN DATA SET
TOTAL NUMBER OF PLOTS IS 139
TOTAL NUMBER OF SPECIES IN EACH LAYER IS    8  14  29  17  51 116  30  61  33
```

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 1 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K RO17		4K PO46		4K RO17		4K R139		4K R115		4K POO7		4K RO68		4K R138		4K RO29		4K RO66		4K RO54		4K RO35		4K RO22		4K RO32		4K RO21	
NUMBER OF SPECIES PER PLOT	30.2		34		34		25		29		33		31		29		26		36		36		36		26		29		28		31	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																																
1 POPU TRE	100.0	40.7	30	2	5	2	35	2	25	2	10	2	55	2	15	2	45	2	60	2	30	2	60	2	60	2	40	2	45	2	40	2
2 POPU BAL	13.0	0.9													15	2									1	2						
3 BETU PAP	4.3	0.0																							1	2						
A2 LAYER																																
POPU TRE	78.3	10.7	5	2	45	2	15	2	30	2	30	2	10	2	5	2	5	2			10	2	1	2	5	2	5	2	5	2		
POPU BAL	21.7	0.8													5	2	1	2			10	2	1	2							1	3
4 PICE GLA	21.7	0.7	5	2	3	2													3	2											1	2
5 SALI REB	17.4	0.7																					1	2							5	2
E LAYER																																
6 PYLA FOL	82.6	3.8	1	2	5	2	5	2	5	2	5	2			5	2			10	2	5	2	5	2			1	2	5	2	1	2
7 PARM SUL	26.1	1.1	1	2																			5	2								
8 HYPO PHY	17.4	0.9																			5	2	5	2								
9 EVER MES	13.0	0.7																					5	2								
10 CETR PIN	8.7	0.4																														
11 CETR HAL	4.3	0.2																														
13 USNE ALP	4.3	0.2																					5	2								
B1 LAYER																																
SALI BEB	52.2	2.1											5	2					1	2	1	2	10	2	15	2	1	2	1	2	3	2
PICE GLA	8.7	0.7	5	2																	10	2										
POPU BAL	8.7	0.3							1	2			5	2																		
14 SALI SCO	4.3	0.2																														
15 AMEL ALN	4.3	0.0																	1	2												
POPU TRE	4.3	0.0															1	2														
B2 LAYER																																
16 SHEP CAN	100.0	35.5	7	2	20	2	65	2	55	2	30	2	10	2	30	2	60	2	50	2	5	2	35	2	25	2	60	2	25	2	25	2
17 ROSA ACI	91.3	8.0	5	2	5	2	2	2	15	2			5	2	1	2	10	2	5	2			10	2	20	2	20	2	15	2	20	2
18 VIBU EDU	91.3	3.9	10	2	3	2	1	2	3	2	1	2	2	2			5	2	5	2			1	2	5	2	1	2	20	2	15	2
POPU TRE	56.5	1.7	5	2	3	2	5	2	1	2	3	2			2	2					5	2					1	2				
PICE GLA	52.2	1.0	5	2	1	2							2	2	1	2					5	2					1	2			1	2
SALI BEB	39.1	1.1			1	2	2	2	3	2	1	2					1	2							5	2	1	2	2	2	1	2
AMEL ALN	30.4	0.4			1	2													2	2			1	2					3	2	1	2
19 RIBE OXY	26.1	0.3							1	2									1	2									3	2		
POPU BAL	13.0	0.6											2	2	10	2	1	2														
BETU PAP	13.0	0.1					1	2											1	2												
20 ROSA WOO	8.7	0.5									2	2																				
SALI SCO	8.7	0.1	1	2																									1	2		
21 SYMP ALB	8.7	0.1																					1	2								
22 ALNU CRI	4.3	0.0							1	2																						
23 CORN STO	4.3	0.0																					1	2								
24 LEDU GRO	4.3	0.0											1	2																		
25 SALI PSE	4.3	0.0																														
26 SYMP OCC	4.3	0.0																														
C LAYER																																
27 CORN CAN	95.7	5.1	5	2	2	2	5	2	15	2	2	2	5	2	1	2	10	2	15	2			5	2	5	2	5	2	15	2	5	2
28 LATH OCH	95.7	2.0	2	2	10	2	2	2	1	2			1	2	1	2	1	2	1	2	1	2	5	2	1	2	1	2	1	2	1	2
29 EPIL ANG	87.0	4.5	2	2			5	2	5	2	1	2	15	2	3	2	5	2			1	2	1	2	3	2	3	2	20	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 1 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K RO17		4K RO46		4K RO47		4K R139		4K R115		4K ROO7		4K RO68		4K R138		4K RO29		4K RO66		4K RO54		4K RO35		4K RO22		4K RO32		4K RO21	
NUMBER OF SPECIES PER PLOT	30.2		34		34		25		29		33		31		29		26		36		36		36		26		29		28		31	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
30 LINN BOR	87.0	2.3	10	2			1	2	1	2	10	2	1	2	1	2	2	2	2	2					3	2	1	2	7	2	1	2
31 RUBU PUB	78.3	1.7	1	2	1	2			2	2			2	2	1	2	1	2	2	2			1	2			1	2	5	2	3	2
32 ACHI MIL	69.6	0.7	1	2	1	2			1	2	1	2			1	2			1	2	1	2	1	2	1	2			1	2	1	2
33 GALI BOR	65.2	1.0			2	2							1	2	1	2	1	2	1	2			5	2					1	2	1	2
34 FRAG VIR	56.5	1.4	4	2							1	2			1	2			3	2	5	2	5	2								
35 ASTE CIL	56.5	0.9	1	2			1	2	1	2	1	2			1	2					1	2	2	2	1	2	1	2				
36 VICI AME	56.5	0.8							2	2			1	2	2	2					2	2	2	2					1	2	1	2
37 PYRO ASA	52.2	0.8	1	2	2	2			5	2			1	2	1	2			1	2	2	2	1	2			1	2	1	2	1	2
38 MERT PAN	47.8	0.8					1	2	1	2			1	2			2	2					1	2			1	2	5	2	1	2
39 PETA PAL	47.8	0.6					1	2	1	2					1	2			1	2	1	2			1	2			1	2	1	2
40 ORTH SEC	39.1	0.4	1	2					1	2							1	2							1	2			1	2	1	2
41 ASIE CON	34.8	1.0			5	2																	3	2					5	1	5	2
42 MAIA CAN	34.8	0.5	4	2	1	2											1	2	1	2					1	2						
43 EQUI SYL	34.8	0.3	1	2					1	2	1	2	1	2					1	2	1	2			1	2						
44 ARCT UVA	26.1	1.0	15	2							3	2					1	2			2	2					1	2				
45 ARAL NUD	21.7	1.3	2	2					1	2									1	2												
46 ASTR AME	21.7	0.4					1	2					2	2	3	2					2	2			1	2						
47 HIER UMB	17.4	0.2									1	2									1	2	1	2							1	2
48 ACTA RUB	13.0	0.1																					1	2								
49 EQUI ARV	13.0	0.1													1	2									1	2			1	2		
50 VIOL REN	13.0	0.1			1	2			1	2																					1	2
51 GENT AMA	8.7	0.1																			1	2										
52 SENE PAP	8.7	0.1													1	2					1	2										
53 TARA OFF	8.7	0.1													1	2					1	2										
54 ASTR VEX	4.3	0.1																			2	2										
55 ANTE APR	4.3	0.0																														
56 ASTR EUC	4.3	0.0																			1	2										
57 EQUI PRA	4.3	0.0																			1	2										
58 OXYT DEF	4.3	0.0																			1	2										
59 PYRO CHL	4.3	0.0																					1	2								
60 SOLI SPA	4.3	0.0									1	2																				
61 THAL VEN	4.3	0.0																														
62 VIOL ADU	4.3	0.0			1	2																										
G LAYER																																
63 ELYM INN	65.2	15.0					5	2					30	2	10	2	15	2	7	2	5	2	20	2			3	2			1	2
64 CALA CAN	21.7	1.6																											1	2		
65 AGRO TRA	13.0	0.5			1	2																	5	2								
66 AGRO SCA	13.0	0.1	1	2							1	2																				
67 CALA STR	8.7	0.1							1	2	1	2																				
68 BROM CIL	4.3	0.2																					5	2								
69 SPHE INT	4.3	0.0									1	2																				
D LAYER																																
70 HYLO SPL	82.6	2.5	35	2	1	2	1	2	3	2			1	2					3	2	1	2	1	2	1	2	1	2	1	2	1	2
71 BRAC SAL	52.2	0.5			1	2					1	2					1	2	1	2	1	2	1	2	1	2			1	2	1	2
72 DREP UNC	47.8	0.5					1	2			1	2			1	2	1	2	1	2	1	2			1	2						
73 PLEU SCH	30.4	0.3			1	2	1	2									1	2	1	2							1	2				
74 AULA PAL	21.7	0.3			2	2							1	2					1	2					1	2						
75 BRAC CAM	17.4	0.2							1	2																						

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 1 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K R017		4K RO46		4K RO17		4K R139		4K R115		4K ROO7		4K RO68		4K R138		4K RO29		4K RO66		4K RO54		4K RO35		4K RO22		4K RO32		4K RO21	
NUMBER OF SPECIES PER PLOT	30.2		34		34		[illegible]		29		33		31		29		26		36		36		36		26		29		28		31	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
76 EURH PUL	17.4	0.2			1	2																										
77 POLY STR	17.4	0.2			1	2					1	2	1	2					1	2												
78 PTIL CRI	17.4	0.2											1	2					1	2							1	2				
79 DICR UND	13.0	0.1			1	2													1	2												
80 POHL NUT	13.0	0.1									1	2	1	2							1	2										
81 PLAG ELL	8.7	0.1			1	2							1	2																		
PYLA POL	8.7	0.1											1	2																		
82 DICR ACU	4.3	0.0	1	2																												
83 LEPT PYR	4.3	0.0																														
84 POLY COM	4.3	0.0					1	2																								
85 POLY JUN	4.3	0.0																														
86 THUI REC	4.3	0.0																			1	2										
L LAYER																																
87 PELT CAN	43.5	0.4			1	2					1	2			1	2	1	2			1	2					1	2			1	2
88 PELT APH	34.8	0.4	2	2	1	2					1	2	1	2					1	2							1	2				
89 CLAD GRA	34.8	0.3			1	2	1	2			1	2	1	2			1	2	1	2							1	2				
90 CLAD MIT	21.7	0.3	3	2	1	2	1	2											1	2							1	2				
91 STER TOM	17.4	0.3	5	2							1	2					1	2							1	2						
92 CLAD COR	17.4	0.2					1	2			1	2															1	2				
93 CLAD CRI	13.0	0.1	1	2							1	2															1	2				
94 CLAD MUL	13.0	0.1																													1	2
95 PELT MAL	8.7	0.1																	1	2												
96 PELT POL	8.7	0.1									1	2																				
97 PELT SP	4.3	0.1	2	2																												
98 CLAD ARB	4.3	0.0																														

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 1 PAGE 4

	4K		4K		4K		4K		4K		4K		4K		4K	
PLOT NUMBER	R064		R009		R062		R063		R109		R116		R059		R080	
NUMBER OF SPECIES PER PLOT	36		27		27		26		28		29		30		28	
SPECIES	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																
1 POPU TRE	55	2	50	2	50	2	60	2	10	2	40	2	55	2	60	2
2 POPU BAL			5	2												
3 BETU PAP																
A2 LAYER																
POPU TRE	10	2					10	2	35	2			5	2	15	2
POPU BAL																
4 PICE GLA															3	2
5 SALI BEB					5	2									5	2
E LAYER																
6 PYLA POL	5	2			5	2	5	2	5	2	5	2	5	2	5	2
7 PARM SUL	5	2									5	2	5	2	5	2
8 HYPO PHY	5	2					5	2								
9 EVER MES													5	2	5	2
10 CETR PIN	5	2									5	2				
11 CETR HAL													5	2		
13 USNE ALP																
B1 LAYER																
SALI BEB	5	2	3	2							2	2	2	2		
PICE GLA																
POPU BAL																
14 SALI SCO	5	2														
15 AMEL ALN																
POPU TRE																
B2 LAYER																
16 SHEP CAN	85	2	70	2	30	2	20	2	45	2	35	2	15	2	15	2
17 ROSA ACI	1	2	20	2	10	2	10	2	2	2	3	2	5	2	1	2
18 VIBU EDU	1	2	3	2	1	2	1	2	5	2	1	2	5	2	1	2
POPU TRE	2	2	5	2			2	2	1	2	5	2				
PICE GLA	1	2			1	2			1	2			2	2	2	2
SALI BEB																
AMEL ALN					1	2	1	2								
19 RIBE OXY					1	2	1	2					1	2		
POPU BAL																
BETU PAP					1	2										
20 ROSA WOO											10	2				
SALI SCO																
21 SYMP ALB							2	2								
22 ALNU CRI																
23 CORN STO																
24 LEDU GRO																
25 SALI PSE											1	2				
26 SYMP OCC					1	2										
C LAYER																
27 CORN CAN	1	2	1	2	2	2	1	2	1	2	3	2	3	2	10	2
28 LATH OCH	1	2	5	2	5	2	3	2	1	2	1	2	1	2	1	2
29 EPIL ANG	1	2	5	2	1	2	1	2	10	2	5	2	1	2	15	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

PLOT NUMBER	4K R064		4K R009		4K R062		4K R063		4K R1[illegible]		4K R116		4K R059		4K R080	
NUMBER OF SPECIES PER PLOT	36		27		27		26		28		29		30		28	
SPECIES	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
30 LINN BOR	1	2	3	2	1	2	1	2	3	2	1	2	2	2	1	2
31 RUBU PUB	1	2	1	2	1	2	1	2			3	2	3	2	10	2
32 ACHI MIL	1	2			1	2					1	2	1	2	1	2
33 GALI BOR			2	2	1	2	1	2	1	2	1	2	1	2	2	2
34 FRAG VIR	2	2	1	2	1	2	1	2			1	2	5	2	2	2
35 ASTE CIL	1	2			1	2	1	2							7	2
36 VICI AME	1	2			1	2	1	2	2	2	1	2	1	2		
37 PYRO ASA											1	2				
38 MERT PAN			1	2					2	2	3	2				
39 PETA PAL	1	2	1	2											3	2
40 ORTH SEC			1	2					1	2	1	2				
41 ASTE CON	1	2	2	2					1	2	1	2				
42 MAIA CAN							1	2	1	2			1	2		
43 EQUI SYL			1	2												
44 ARCT UVA									1	2						
45 ARAL NUD			1	2			25	2								
46 ASTR AME																
47 HIER UMB																
48 ACTA RUB	1	2											1	2		
49 EQUI ARV																
50 VIOL REN																
51 GENT AMA											1	2				
52 SENE PAP																
53 TARA OFF																
54 ASTR VEX																
55 ANTE APR	1	2														
56 ASTR EUC																
57 EQUI PRA																
58 OXYT DEF																
59 PYRO CHL																
60 SOLI SPA																
61 THAL VEN							1	2								
62 VIOL ADU																
G LAYER																
63 ELYM INN			60	2	50	2	50	2	10	2	30	2	50	2		
64 CALA CAN					1	2	15	2					10	2	10	2
65 AGRO TRA					5	2										
66 AGRO SCA	1	2														
67 CALA STR																
68 BROM CIL																
69 SPHE INT																
D LAYER																
70 HYLO SPL	1	2	2	2			1	2	1	2	1	2	1	2	1	2
71 BRAC SAL	1	2			1	2			1	2						
72 DREP UNC									1	2	1	2	1	2	1	2
73 PLEU SCH			1	2							1	2				
74 AULA PAL									1	2						
75 BRAC CAM	1	2			1	2							1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A1		

POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:4' APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 1 PAGE 6

PLOT NUMBER	4K R064	4K R009	4K R062	4K R063	4K R109	4K R116	4K R059	4K R080
NUMBER OF SPECIES PER PLOT	36	27	27	26	28	29	30	28
SPECIES	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV
76 EUPH PUL			1 2				1 2	1 2
77 POLY STR								
78 PTIL CRI								1 2
79 DICR UND		1 2						
80 POHL NUT								
81 PLAG ELL								
PYLA FOL		1 2						
82 DICR ACU								
83 LEPT PYR	1 2							
84 POLY COM								
85 POLY JUN	1 2							
86 THUI REC								
L LAYER								
87 PELT CAN	1 2				1 2		1 2	
88 PELT APH	1 2				1 2			
89 CLAD GRA					1 2			
90 CLAD MIT								
91 STER TOM								
92 CLAD COR	1 2							
93 CLAD CRI								
94 CLAD MUL	1 2							1 2
95 PELT MAL		1 2						
96 PELT POL					1 2			
97 PELT SP								
98 CLAD ARB		1 2						

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A2		

P. TREMULOIDES/ROSA SPP./EQUISETUM PRATENSE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 2 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R134		4K R076		4K R012	
NUMBER OF SPECIES PER PLOT	27.0		28		28		25	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
A1 LAYER								
1 POPU TRE	100.0	58.3	50	2	60	2	65	2
A2 LAYER								
POPU TRE	66.7	5.0	10	2	5	2		
E LAYER								
2 PYLA POL	100.0	5.0	5	2	5	2	5	2
3 BRAC CAM	33.3	1.7	5	2				
B1 LAYER								
4 SALI BEB	33.3	0.7	2	2				
5 AMEL ALN	33.3	0.3			1	2		
B2 LAYER								
6 RUBU IDA	100.0	11.0	2	2	30	2	1	2
7 ROSA ACI	100.0	10.0	10	2	10	2	10	2
8 RIBE OXY	100.0	1.3	2	2	1	2	1	2
9 ROSA WOO	66.7	18.3	15	2	40	2		
10 VIBU EDU	66.7	5.3	15	2			1	2
11 CORN STO	66.7	2.0	5	2			1	2
12 SYMP ALB	66.7	2.0	1	2	5	2		
13 LONI DIO	66.7	1.3	1	2	3	2		
POPU TRE	66.7	1.0			1	2	2	2
AMEL ALN	33.3	0.7	2	2				
SALI BEB	33.3	0.7	2	2				
14 LONI INV	33.3	0.3					1	2
15 RIBE TRI	33.3	0.3	1	2				
C LAYER								
16 MERT PAN	100.0	10.0	5	2	15	2	10	2
17 GALI BOR	100.0	1.0	1	2	1	2	1	2
18 EQUI PRA	66.7	15.0	20	2			25	2
19 DELP GLA	66.7	1.3			1	2	3	2
20 EPIL ANG	66.7	1.3	2	2	2	2		
21 LATH OCH	66.7	0.7	1	2			1	2
22 RUBU PUB	66.7	0.7	1	2	1	2		
23 THAL VEN	66.7	0.7			1	2	1	2
24 VICI AME	66.7	0.7	1	2	1	2		
25 ARAL NUD	33.3	1.7	5	2				
26 ASTE CON	33.3	1.7			5	2		
27 PYRO ASA	33.3	0.7					2	2
28 ACHI MIL	33.3	0.3					1	2
29 ACTA RUB	33.3	0.3					1	2
30 ASTE CIL	33.3	0.3					1	2
31 FRAG VIR	33.3	0.3					1	2
32 MITE NUD	33.3	0.3					1	2
33 PETA PAL	33.3	0.3	1	2				
34 SENE PAP	33.3	0.3					1	2
35 SMIL STE	33.3	0.3			1	2		
36 TARA OFF	33.3	0.3					1	2
37 VIOL CAN	33.3	0.3	1	2				

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A2		

P. TREMULOIDES/ROSA SPP./EQUISETUM PRATENSE

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 2 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R134		4K R076		4K R012	
NUMBER OF SPECIES PER PLOT	27.0		28		28		25	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
G LAYER								
38 CALA CAN	66.7	3.7			10	2	1	2
39 ELYM INN	33.3	0.3	1	2				
D LAYER								
40 BRAC SAL	33.3	3.3			10	2		
41 AULA PAL	33.3	0.3			1	2		
BRAC CAM	33.3	0.3					1	2
42 HAPL MIC	33.3	0.3			1	2		
43 HYLO SPL	33.3	0.3	1	2				
44 ONCO WAH	33.3	0.3			1	2		
45 PLAG CUS	33.3	0.3			1	2		
46 PLEU SCH	33.3	0.3			1	2		
47 PTIL CRI	33.3	0.3			1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A3.0		

P. TREMULOIDES/VIBURNUM EDULE-ROSA SPP./ELYMUS INNOVATUS PHASE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 3 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R065		4K R114		4K R053		4K R112		4K R023		4K R060		4K R039		4K R124		4K R057		4K R012		4K R072		4K R073	
NUMBER OF SPECIES PER PLOT	28.3		32		26		31		19		30		28		30		38		24		33		21		27	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																										
1 POPU TRE	100.0	40.8	40	2	50	2	50	2	55	2	20	2	65	2	35	2	50	2	40	2	30	2	25	2	30	2
2 POPU BAL	8.3	0.3													3	2										
A2 LAYER																										
POPU TRE	75.0	9.8	10	2	15	2	50	2	5	2	2	2			5	2			20	2			5	2	5	2
3 PICE GLA	33.3	1.3			1	2					2	2					2	2			10	2				
POPU BAL	16.7	0.3													2	2	2	2								
4 PICE MAR	8.3	1.3																			15	2				
5 SALI BEB	8.3	1.3																							15	2
E LAYER																										
6 PYLA POL	83.3	3.8	5	2	5	2	5	2	5	2			5	2	5	2			5	2	1	2	5	2	5	2
7 PARM SUL	25.0	0.9																			1	2	5	2	5	2
8 HYPO PHY	16.7	0.5																			1	2			5	2
9 EVER MES	8.3	0.4																							5	2
10 CALO SPP	8.3	0.1																			1	2				
11 CETR PIN	8.3	0.1																			1	2				
12 USNE SOR	8.3	0.1																			1	2				
B1 LAYER																										
SALI BEB	25.0	0.3							2	2							1	2	1	2						
PICE GLA	16.7	0.9									1	2							10	2						
13 AMEL ALN	8.3	0.1																					1	2		
POPU BAL	8.3	0.1													1	2										
POPU TRE	8.3	0.1															1	2								
B2 LAYER																										
14 ROSA ACI	75.0	6.9	5	2			5	2	20	2	10	2			20	2	1	2	10	2			10	2	2	2
15 VIBU EDU	66.7	5.4	15	2	7	2			5	2	5	2					1	2			2	2	20	2	10	2
16 SHEP CAN	66.7	4.2	7	2	5	2			5	2	2	2	1	2	15	2	5	2	10	2						
POPU TRE	50.0	0.9	1	2	2	2	3	2	1	2							3	2			1	2				
17 SYMP ALB	41.7	0.6							1	2	3	2							1	2			1	2	1	2
18 ROSA WOO	33.3	2.9			10	2	15	2					5	2			5	2								
SALI BEB	33.3	1.6									1	2	1	2			2	2							15	2
AMEL ALN	33.3	0.8	1	2	1	2	6	2					1	2												
PICE GLA	33.3	0.5											1	2	3	2	1	2			1	2				
19 CORN STO	25.0	0.6					1	2							5	2			1	2						
20 BETU GLA	16.7	0.5															5	2	1	2						
21 LEDU GRO	8.3	0.8																			10	2				
POPU BAL	8.3	0.2															2	2								
22 SALI PSE	8.3	0.2													2	2										
23 LONI DIO	8.3	0.1															1	2								
24 RIBE OXY	8.3	0.1									1	2														
25 RIBE TRI	8.3	0.1															1	2								
26 RUBU IDA	8.3	0.1																					1	2		
27 SALI SCO	8.3	0.1																			1	2				
28 VACC CAE	8.3	0.1					1	2																		
29 VACC MYR	8.3	0.1																			1	2				
C LAYER																										
30 CORN CAN	91.7	3.9	5	2	15	2	3	2	3	2	5	2	1	2			1	2	1	2	10	2	2	2	1	2
31 EPIL ANG	91.7	3.9	1	2	2	2	4	2	3	2	8	2	2	2	20	2	2	2	2	2	2	2			1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A3.0		

P. TREMULOIDES/VIBURNUM EDULE-ROSA SPP./ELYMUS INNOVATUS PHASE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 3 PAGE 2

	AVERAGE		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K	
PLOT NUMBER	VALUE		R065		R114		R053		R112		R023		R060		R039		R124		R057		R012		R072		R073	
NUMBER OF SPECIES PER PLOT	28.3		32		26		31		19		30		28		30		38		24		33		21		27	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
32 GALI BOR	91.7	1.0	1	2	1	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2			1	2	1	2
33 VICI AME	91.7	1.0	1	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2			1	2	1	2
34 LATH OCH	75.0	1.7	1	2	2	2	1	2	5	2	1	2			1	2	2	2					2	2	5	2
35 LINN BOR	66.7	1.5	1	2	3	2	2	2			2	2			3	2	4	2			2	2			1	2
36 FRAG VIR	66.7	1.3	3	2	1	2	2	2	3	2	1	2			3	2	1	2	1	2						
37 RUBU PUB	66.7	1.2	3	2	1	2	1	2					1	2	3	2			1	2			3	2	1	2
38 ASTE CIL	66.7	1.1	1	2			1	2			1	2	1	2			1	2	2	2			5	2	1	2
39 MERT PAN	66.7	0.8	1	2			2	2			1	2	1	2	2	2	1	2	1	2					1	2
40 PETA PAL	58.3	0.8	1	2					1	2	2	2	1	2			1	2			3	2			1	2
41 ACHI MIL	58.3	0.6					1	2	1	2	1	2	1	2	1	2	1	2			1	2				
42 MAIA CAN	58.3	0.6					1	2			1	2	1	2	1	2			1	2			1	2	1	2
43 ASTE CON	33.3	1.2			2	2	1	2			1	2	10	2												
44 ORTH SEC	33.3	0.3			1	2									1	2			1	2	1	2				
45 PYRO ASA	33.3	0.3	1	2											1	2	1	2	1	2						
46 ARAL NUD	16.7	2.5																					20	2	10	2
47 VACC VIT	16.7	0.5			1	2															5	2				
48 ARCT UVA	16.7	0.2									1	2					1	2								
49 LYCO COM	8.3	0.4																			5	2				
50 LATH VEN	8.3	0.2											2	2												
51 PEDI LAB	8.3	0.2																			2	2				
52 ACHI SIB	8.3	0.1											1	2												
53 ACTA RUB	8.3	0.1															1	2								
54 ASTR AME	8.3	0.1													1	2										
55 CORA TRI	8.3	0.1																			1	2				
56 EQUI SYL	8.3	0.1																	1	2						
57 GEOC LIV	8.3	0.1																			1	2				
58 HIER UMB	8.3	0.1											1	2												
59 PYRO CHL	8.3	0.1													1	2										
60 SENE PAP	8.3	0.1					1	2																		
61 TRIE BOR	8.3	0.1					1	2																		
VACC CAE	8.3	0.1																			1	2				
G LAYER																										
62 ELYM INN	91.7	18.3	40	2	40	2	20	2	40	2	25	2			5	2	15	2	15	2	5	2	5	2	10	2
63 CALA CAN	33.3	3.6					10	2					20	2			10	2							3	2
64 SCHI PUR	8.3	1.7					20	2																		
D LAYER																										
65 HYLO SPL	83.3	3.1	1	2	2	2	1	2			3	2	2	2	1	2	10	2	1	2	15	2			1	2
66 BRAC CAM	41.7	0.4			1	2			1	2							1	2					1	2	1	2
67 PLEU SCH	41.7	0.4	1	2	1	2	1	2							1	2					1	2				
68 AULA PAL	25.0	0.3	1	2							1	2	1	2												
69 BRAC SAL	25.0	0.3					1	2					1	2	1	2										
70 DREP UNC	16.7	0.2	1	2									1	2												
71 EURH PUL	16.7	0.2											1	2									1	2		
72 PLAG CUS	16.7	0.2															1	2					1	2		
73 PTIL CRI	16.7	0.2	1	2																	1	2				
74 CERA PUR	8.3	0.1					1	2																		
75 DICR POL	8.3	0.1	1	2																						
76 DICR SCO	8.3	0.1	1	2																						

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A3.0		

P. TREMULOIDES/VIBURNUM EDULE-ROSA SPP./ELYMUS INNOVATUS PHASE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 3 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K RO65	4K R114	4K RO53	4K R112	4K RO23	4K RO60	4K RO39	4K R124	4K RO57	4K RO12	4K RO72	4K RO73
NUMBER OF SPECIES PER PLOT	28.3		32	26	31	19	30	28	30	38	24	33	21	27
SPECIES	%P	MC	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV
77 DICR UND	8.3	0.1	1 2											
PYLA POL	8.3	0.1							1 2					
L LAYER														
78 PELT CAN	33.3	0.3	1 2	1 2						1 2		1 2		
79 PELT APH	25.0	0.3	1 2	1 2			1 2							
80 CLAD GRA	16.7	0.2					1 2	1 2						
81 PELT POL	16.7	0.2	1 2							1 2				
82 CLAD FUR	8.3	0.1										1 2		
EVER MES	8.3	0.1								1 2				
83 PELT MAL	8.3	0.1					1 2							

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A3.1		

P.TREMULOIDES/VIBURNUM EDULE-ROSA SPP./CORNUS CANADENSIS PHASE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 4 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R108		4K R030		4K R055		4K R074		4K R126		4K R033		4K R132	
NUMBER OF SPECIES PER PLOT	32.1		28		30		30		29		29		37		42	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																
1 POPU TRE	100.0	34.3	30	2	45	2	25	2	35	2	50	2	35	2	20	2
2 POPU BAL	14.3	0.3													2	2
A2 LAYER																
POPU TRE	57.1	5.0	20	2	5	2	5	2							5	2
3 PICE GLA	42.9	2.4					1	2	15	2					1	2
4 BETU PAP	28.6	0.6			2	2									2	2
POPU BAL	14.3	1.4													10	2
5 SALI BEB	14.3	0.4	3	2												
6 BETU OCC	14.3	0.1			1	2										
E LAYER																
7 PYLA POL	71.4	3.6			5	2	5	2	5	2			5	2	5	2
8 CETR HAL	42.9	1.0	1	2					5	2					1	2
9 EVER MES	28.6	0.9											5	2	1	2
10 PARM SUL	28.6	0.3	1	2											1	2
11 HYPO PHY	14.3	0.7							5	2						
12 ORTH OBT	14.3	0.7					5	2								
13 USNE SOR	14.3	0.1											1	2		
B1 LAYER																
POPU TRE	28.6	1.1					3	2					5	2		
14 ALNU CRI	14.3	0.4													3	2
BETU PAP	14.3	0.3													2	2
15 SALI SCO	14.3	0.3													2	2
PICE GLA	14.3	0.1					1	2								
SALI BEB	14.3	0.1			1	2										
B2 LAYER																
16 VIBU EDU	100.0	19.4	20	2	20	2	40	2	20	2	20	2	1	2	15	2
17 ROSA ACI	100.0	10.1	5	2	15	2	20	2	10	2	5	2	2	2	14	2
POPU TRE	57.1	4.6			1	2	5	2	1	2			25	2		
18 SHEP CAN	57.1	2.0	1	2	5	2					7	2			1	2
PICE GLA	57.1	0.6			1	2	1	2			1	2	1	2		
19 AMEL ALN	42.9	0.6	1	2			1	2			2	2				
20 RIBE OXY	42.9	0.4			1	2					1	2	1	2		
SALI BEB	42.9	0.4			1	2	1	2					1	2		
21 LONI DIO	28.6	0.3									1	2	1	2		
22 SYMP ALB	28.6	0.3	1	2											1	2
ALNU CRI	14.3	0.3													2	2
SALI SCO	14.3	0.3													2	2
23 BETU NEO	14.3	0.1											1	2		
BETU PAP	14.3	0.1			1	2										
24 LEDU GRO	14.3	0.1			1	2										
25 PRUN PEN	14.3	0.1													1	2
26 VACC MYR	14.3	0.1													1	2
C LAYER																
27 EPIL ANG	100.0	10.3	4	2	3	2	10	2	15	2	20	2	10	2	10	2
28 CORN CAN	100.0	8.9	10	2	15	2	5	2	7	2	15	2	5	2	5	2
29 LATH OCH	100.0	3.1	2	2	3	2	10	2	1	2	1	2	3	2	2	2
30 RUBU PUB	100.0	2.9	3	2	3	2	5	2	3	2	3	2	1	2	2	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A3.1		

P.TREMULOIDES/VIBURNUM EDULE-ROSA SPP./CORNUS CANADENSIS PHASE

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 4 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R108		4K RO30		4K RO5[illegible]		4K RO74		4K R126		4K RO33		4K R132	
NUMBER OF SPECIES PER PLOT	32.1		28		30		30		29		29		37		42	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
31 LINN BOR	85.7	3.3	1	2	1	2	3	2	5	2	10	2	3	2		
32 GALI BOR	85.7	1.1	1	2	3	2	1	2			1	2	1	2	1	2
33 PYRO ASA	85.7	1.0	1	2			2	2	1	2	1	2	1	2	1	2
34 ASTE CON	71.4	3.3	1	2	4	2	1	2			2	2			15	2
35 MERT PAN	71.4	1.6			3	2	2	2	1	2	1	2			4	2
36 VICI AME	71.4	1.4			2	2	5	2			1	2	1	2	1	2
37 FRAG VIR	71.4	0.9			2	2	1	2	1	2			1	2	1	2
38 PETA PAL	71.4	0.9	1	2	1	2			2	2			1	2	1	2
39 MAIA CAN	71.4	0.7			1	2	1	2	1	2	1	2			1	2
40 ARAL NUD	42.9	3.0			1	2	15	2			5	2				
41 ASTE CIL	42.9	0.6									2	2	1	2	1	2
42 EQUI SYL	42.9	0.4							1	2			1	2	1	2
43 MITE NUD	42.9	0.4	1	2					1	2					1	2
44 VIOL REN	42.9	0.4					1	2	1	2	1	2				
45 ACHI MIL	28.6	0.3											1	2	1	2
46 ORTH SEC	28.6	0.3									1	2			1	2
47 ASTR AME	14.3	0.3	2	2												
48 GENT AMA	14.3	0.1													1	2
49 GYMN DRY	14.3	0.1											1	2		
50 PYRO ELL	14.3	0.1									1	2				
51 TRIE BOR	14.3	0.1									1	2				
G LAYER																
52 CALA CAN	42.9	1.0					5	2	1	2					1	2
53 ELYM INN	28.6	2.9	5	2	15	2										
54 CALA STR	28.6	0.4							1	2			2	2		
55 CALA INE	14.3	0.1									1	2				
56 POAP RA	14.3	0.1											1	2		
D LAYER																
57 HYLO SPL	71.4	1.4	1	2			1	2	5	2			2	2	1	2
58 PLEU SCH	42.9	1.7	1	2					10	2			1	2		
59 BRAC SAL	42.9	0.4	1	2			1	2			1	2				
60 DREP UNC	42.9	0.4	1	2									1	2	1	2
61 AULA PAL	28.6	0.3	1	2									1	2		
62 BRAC CAM	28.6	0.3			1	2					1	2				
63 EURH PUL	28.6	0.3									1	2	1	2		
64 PTIL CRI	28.6	0.3	1	2					1	2						
65 DICR SCO	14.3	0.1											1	2		
66 POLY COM	14.3	0.1											1	2		
67 POLY STR	14.3	0.1							1	2						
L LAYER																
68 PELT APH	14.3	0.1							1	2						
69 PELT CAN	14.3	0.1							1	2						
70 PELT SP	14.3	0.1											1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT MW	A4		

P. TREMULOIDES/VIBURNUM EDULE-ROSA-CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 5 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R051		4K R052		4K R002		4K R038		4K R028		4K R008		4K R020		4K R048		4K R081	
NUMBER OF SPECIES PER PLOT	32.4		28		30		34		33		35		36		38		25		33	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																				
1 POPU TRE	100.0	45.6	40	2	55	2	40	2	40	2	50	2	40	2	30	2	60	2	55	2
2 POPU BAL	33.3	1.0					3	2	5	2	1	2								
A2 LAYER																				
POPU TRE	55.6	3.3	10	2	5	2			5	2			5	2	5	2				
POPU BAL	55.6	1.0	5	2					1	2	1	2			1	2			1	2
3 PICE GLA	33.3	0.9									3	2			3	2			2	2
4 SALI BEB	11.1	0.1									1	2								
E LAYER																				
5 PYLA POL	66.7	2.0	5	2					5	2	1	2	1	2	1	2			5	2
6 PARM SUL	22.2	0.7							5	2	1	2								
7 CLAD COR	11.1	0.6																	5	2
8 PELT CAN	11.1	0.6																	5	2
B1 LAYER																				
SALI BEB	55.6	1.7	4	2	6	2			1	2	3	2	1	2						
9 AMEL ALN	22.2	0.4	2	2	2	2														
POPU BAL	22.2	0.4			1	2					3	2								
10 SALI PSE	22.2	0.4			3	2									1	2				
11 SALI SP	11.1	0.3	3	2																
POPU TRE	11.1	0.2			2	2														
PICE GLA	11.1	0.1													1	2				
B2 LAYER																				
12 ROSA ACI	100.0	24.8	55	2	35	2	10	2	45	2	5	2	20	2	3	2	35	2	15	2
13 RIBE OXY	100.0	1.9	2	2	2	2	1	2	5	2	1	2	2	2	1	2	1	2	2	2
14 CORN STO	88.9	15.7	15	2	15	2	15	2	20	2	60	2			5	2	10	2	1	2
15 VIBU EDU	77.8	11.6	5	2	3	2	1	2	25	2	25	2					20	2	25	2
POPU TRE	77.8	7.1	2	2	2	2			2	2	10	2	45	2	1	2			2	2
SALI BEB	55.6	0.7	1	2	2	2					1	2			1	2			1	2
16 RUBU IDA	44.4	0.6							1	2			2	2			1	2	1	2
17 SYMP ALB	44.4	0.4							1	2	1	2	1	2	1	2				
POPU BAL	33.3	2.1			2	2	15	2			2	2								
18 LONI INV	22.2	3.7													3	2			30	2
AMEL ALN	22.2	0.3	1	2	2	2														
19 LONI DIO	22.2	0.3			1	2	2	2												
SALI PSE	22.2	0.2			1	2									1	2				
SALI SP	11.1	0.3	3	2																
20 RIBE TRI	11.1	0.2									2	2								
21 BETU PAP	11.1	0.1					1	2												
PICE GLA	11.1	0.1													1	2				
22 PRUN PEN	11.1	0.1	1	2																
23 PRUN VIR	11.1	0.1									1	2								
C LAYER																				
24 MERT PAN	100.0	4.4	1	2	1	2	3	2	3	2	1	2	15	2	1	2	10	2	5	2
25 RUBU PUB	100.0	2.4	2	2	1	2	3	2	1	2	1	2	5	2	3	2	1	2	5	2
26 EQUI ARV	88.9	10.1	25	2	60	3	1	2	1	2	1	2	1	2			1	2	1	2
27 FRAG VIR	88.9	1.2	2	2	1	2	1	2			1	2	1	2	2	2	1	2	2	2
28 EPIL ANG	77.8	2.3			1	2	3	2	5	2			5	2	5	2	1	2	1	2
29 LATH OCH	77.8	0.9	1	2	1	2	1	2	1	2			1	2	2	2	1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A4		

P. TREMULOIDES/VIBURNUM EDULE ROSA-CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 5 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R051		4K R052		4K R002		4K R038		4K R028		4K R008		4K R020		4K R048		4K R081	
NUMBER OF SPECIES PER PLOT	32.4		28		30		31		33		35		36		38		25		33	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
30 VICI AME	66.7	1.2	2	2	5	2			1	2			1	2	1	2	1	2		
31 ASTE CIL	66.7	1.1			1	2	5	2			1	2	1	2	1	2			1	2
32 GALI BOR	66.7	0.9	2	2	1	2	1	2	1	2			2	2			1	2		
33 PYRO ASA	66.7	0.9	1	2	2	2							2	2	1	2	1	2	1	2
34 VIOL REN	66.7	0.7					1	2	1	2	1	2	1	2	1	2			1	2
35 CORN CAN	55.6	1.3					1	2	3	2					1	2	5	2	2	2
36 ACHI MIL	55.6	0.7			1	2	1	2					2	2	1	2	1	2		
37 PETA PAL	55.6	0.7					1	2			1	2	1	2			1	2	2	2
38 GALI TRI	55.6	0.6	1	2					1	2	1	2			1	2			1	2
39 MITE NUD	44.4	0.7							2	2	1	2			1	2			2	2
40 EQUI PRA	33.3	0.3					1	2	1	2	1	2								
41 LINN BOR	22.2	0.4													1	2			3	2
42 MOEH LAT	22.2	0.2							1	2			1	2						
43 ARAL NUD	11.1	0.6																	5	2
44 DELP GLA	11.1	0.6							5	2										
45 TRIE BOR	11.1	0.3											3	2						
46 BOTR LUN	11.1	0.1													1	2				
47 EQUI SYL	11.1	0.1															1	2		
48 MAIA CAN	11.1	0.1											1	2						
49 ORTH SEC	11.1	0.1													1	2				
50 OSMO DEP	11.1	0.1									1	2								
51 PYRO CHL	11.1	0.1							1	2										
52 SMIL STE	11.1	0.1									1	2								
53 THAL VEN	11.1	0.1	1	2																
54 VACC VIT	11.1	0.1					1	2												
55 VIOL ADU	11.1	0.1															1	2		
G LAYER																				
56 CALA CAN	44.4	0.4	1	2	1	2					1	2							1	2
57 ELYM INN	33.3	1.7					4	2					1	2			10	2		
58 AGRO TRA	22.2	0.2			1	2							1	2						
59 CALA INE	22.2	0.2					1	2					1	2						
60 CALA STR	22.2	0.2							1	2					1	2				
61 AGRO SP	11.1	0.1													1	2				
62 BROM CIL	11.1	0.1											1	2						
D LAYER																				
63 HYLO SPL	66.7	0.7					1	2	1	2			1	2	1	2	1	2	1	2
64 PLAG CUS	66.7	0.7	1	2			1	2	1	2	1	2	1	2					1	2
65 EURH PUL	44.4	0.4					1	2			1	2	1	2					1	2
66 BRAC SAL	33.3	0.3					1	2					1	2			1	2		
67 AULA PAL	22.2	0.2											1	2	1	2				
68 BRAC CAM	22.2	0.2							1	2									1	2
69 THUI REC	22.2	0.2											1	2			1	2		
70 CAMP POL	11.1	0.1											1	2						
71 DICR UND	11.1	0.1					1	2												
72 DREP UNC	11.1	0.1													1	2				
73 PLEU SCH	11.1	0.1					1	2												
74 PTIL CRI	11.1	0.1					1	2												
PYLA POL	11.1	0.1					1	2												

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A4		

P. TREMULOIDES/VIBURNUM EDULE-ROSA-CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 5 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K R051	4K R052	4K R002	4K R038	4K R028	4K R008	4K R020	4K R048	4K R081
NUMBER OF SPECIES PER PLOT	32.4		28	30	34	33	35	36	38	25	33
SPECIES	%P	MC	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV	%C SV
L LAYER											
75 PELT APH	33.3	0.3			1 2		1 2			1 2	
PELT CAN	11.1	0.1							1 2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A5		

P.TREMULOIDES/ALNUS CRISPA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 6 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R004		4K R088		4K R0[illegible]		4K R096		4K R122		4K R045		4K R013		4K R131		4K R121		4K R019		4K R125	
NUMBER OF SPECIES PER PLOT	32.4		27		27		28		41		34		31		35		33		29		24		47	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																								
1 POPU TRE	100.0	44.5	70	2	65	2	55	2	30	2	20	2	45	2	60	2	55	2	20	2	45	2	25	2
2 POPU BAL	36.4	2.9							5	2									15	2	10	2	2	2
3 PICE GLA	18.2	0.5									5	2							1	2				
A2 LAYER																								
POPU TRE	72.7	6.7	15	2	10	2	2	2	10	2			5	2			15	2	2	2			15	2
POPU BAL	27.3	0.5							2	2									2	2			1	2
E LAYER																								
4 PYLA POL	81.8	3.5			5	2	10	2	5	2			5	2	1	2	1	2	5	2	1	2	5	2
5 PARM SUL	63.6	1.0			5	2	1	2	1	2					1	2	1	2	1	2			1	2
6 CETR HAL	54.5	1.3			5	2	1	2	1	2	5	2					1	2	1	2				
7 USNE SOR	36.4	0.7									5	2					1	2	1	2			1	2
8 EVER MES	27.3	1.0			5	2					5	2											1	2
9 BRAC CAM	18.2	0.9					5	2									5	2						
10 CETR PIN	18.2	0.2							1	2					1	2								
11 PARM SEP	9.1	0.1													1	2								
12 PHYS ADS	9.1	0.1													1	2								
B1 LAYER																								
13 ALNU CRI	81.8	13.8	25	2	10	2	15	2	20	1	10	2	25	2	15	2			2	2	30	2		
14 SALI SCO	27.3	2.0	15	2	5	2											2	2						
POPU BAL	9.1	0.2																	2	2				
POPU TRE	9.1	0.1									1	2												
B2 LAYER																								
15 VIBU EDU	100.0	15.8	45	2	45	2	15	2	5	2	5	2	1	2	30	2	5	2	2	2	20	2	1	2
16 ROSA ACI	72.7	6.0	15	2	5	2	20	2	3	2	5	2	3	2	5	2					10	2		
ALNU CRI	63.6	7.4	10	2	1	2			5	2					5	2	25	2	30	2	5	2		
17 RUBU IDA	54.5	4.9					35	2	10	2							1	2	5	2	2	2	1	2
POPU TRE	54.5	3.8					5	2			20	2	10	2	1	2					5	2	1	2
18 SHEP CAN	36.4	0.5							1	2	2	2	1	2									2	2
19 ROSA WOO	27.3	1.6									10	2					5	2	3	2				
POPU BAL	27.3	0.6					1	2													1	2	5	2
20 RIBE OXY	18.2	0.3																	2	2			1	2
21 LONI DIO	18.2	0.2									1	2					1	2						
PICE GLA	18.2	0.2							1	2													1	2
SALI SCO	9.1	0.9	10	2																				
22 SALI MYR	9.1	0.5																					5	2
23 LEDU GRO	9.1	0.2									2	2												
24 SALI PSE	9.1	0.2																					2	2
25 SYMP ALB	9.1	0.2									2	2												
26 RIBE TRI	9.1	0.1					1	2																
27 SALI DRU	9.1	0.1	1	2																				
C LAYER																								
28 RUBU PUB	100.0	6.3	2	2	3	2	15	2	15	2	10	2	1	2	1	2	15	2	1	2	5	2	1	2
29 PYRO ASA	100.0	6.2	1	2	1	2	30	2	1	2	2	2	1	2	5	2	5	2	1	2	20	2	1	2
30 LINN BOR	90.9	7.1	10	2	5	2	15	2	7	2	3	2	1	2	1	2	10	2			1	2	25	2
31 CORN CAN	90.9	6.1	5	2	3	2	2	2	1	2	5	2	10	2	5	2	15	2	1	2	20	2		
32 MERT PAN	81.8	4.5	2	2	10	2	2	2	2	2	5	2			2	2			5	2	20	2	2	2
33 PETA PAL	81.8	1.9	1	2	1	2	2	2	10	2	1	2					3	2	1	2	1	2	1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A5		

P.TREMULOIDES/ALNUS CRISPA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 6 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R004		4K R088		4K R093		4K R096		4K R122		4K R045		4K R013		4K R131		4K R121		4K R019		4K R125	
NUMBER OF SPECIES PER PLOT	32.4		27		27		28		41		34		31		35		33		29		24		47	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
34 ORTH SEC	81.8	1.0	1	2	1	2			2	2	1	2	1	2			1	2	1	2	1	2	2	2
35 EPIL ANG	72.7	2.6	1	2	1	2	10	2	1	2	2	2	2	2	10	2	2	2						
36 MAIA CAN	54.5	0.7	2	2	1	2	1	2					2	2	1	2			1	2				
37 LATH OCH	54.5	0.5	1	2					1	2	1	2	1	2	1	2					1	2		
38 FRAG VIR	45.5	0.8			1	2			1	2			1	2					1	2			5	2
39 EQUI SYL	45.5	0.5					1	2	1	2							1	2			2	2	1	2
40 GALI TRI	45.5	0.5	1	2					1	2							1	2	1	2			1	2
41 MITE NUD	45.5	0.5					1	2	1	2					1	2	1	2					1	2
42 VIOL REN	45.5	0.5			1	2			1	2							1	2			1	2	1	2
43 ACTA RUB	36.4	0.5					1	2							2	2					1	2	1	2
44 ARAL NUD	27.3	3.3									1	2	20	2	15	2								
45 VICI AME	27.3	0.4	1	2																	1	2	2	2
46 ASTE CON	18.2	0.5									5	2	1	2										
47 EQUI ARV	18.2	0.4																			1	2	3	2
48 ASTE CIL	18.2	0.3																	2	2			1	2
49 ACHI MIL	18.2	0.2											1	2			1	2						
50 CORA TRI	18.2	0.2															1	2					1	2
51 ARCT UVA	9.1	0.3											3	2										
52 ASTR AME	9.1	0.3																					3	2
53 PYRO ELL	9.1	0.2											2	2										
54 GALI BOR	9.1	0.1									1	2												
55 GENT AMA	9.1	0.1																					1	2
56 GEOC LIV	9.1	0.1											1	2										
57 HIER UMB	9.1	0.1									1	2												
58 MOEH LAT	9.1	0.1											1	2										
59 SENE PAP	9.1	0.1																					1	2
60 SMIL TRI	9.1	0.1	1	2																				
G LAYER																								
61 ELYM INN	45.5	7.6	2	2	30	2			1	2	50	2							1	2				
62 CALA CAN	36.4	1.2			10	2			1	2			1	2	1	2								
63 CALA STR	36.4	1.0					1	2									2	2	7	2			1	2
64 CALA INE	9.1	0.9									10	2												
65 AGRO SP	9.1	0.1			1	2																		
66 CARE AUR	9.1	0.1																					1	2
D LAYER																								
67 HYLO SPL	72.7	1.1	1	2			1	2	1	2	1	2	1	2	1	2	5	2					1	2
68 PLEU SCH	45.5	0.6							3	2	1	2			1	2	1	2					1	2
69 PTIL CRI	45.5	0.5					1	2	1	2					1	2	1	2					1	2
70 BRAC SAL	27.3	0.3			1	2							1	2			1	2						
71 AULA PAL	18.2	0.2											1	2			1	2						
BRAC CAM	18.2	0.2							1	2									1	2				
72 DICR UND	18.2	0.2							1	2													1	2
73 DREP UNC	18.2	0.2							1	2					1	2								
74 PLAG CUS	18.2	0.2											1	2									1	2
75 PLAG DRU	18.2	0.2									1	2			1	2								
76 DICR ACU	9.1	0.1											1	2										
77 DICR FUS	9.1	0.1													1	2								
78 DICR POL	9.1	0.1							1	2														

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A5		

P.TREMULOIDES/ALNUS CRISPA

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 6 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K RO04		4K PO88		4K RO93		4K RO96		4K R122		4K RO45		4K RO13		4K R131		4K R121		4K RO19		4K R125	
NUMBER OF SPECIES PER PLOT	32.4		27		27		28		41		34		31		35		33		29		24		47	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
79 EURH PUL	9.1	0.1					1	2																
80 POHL NUT	9.1	0.1													1	2								
PYLA POL	9.1	0.1	1	2																				
81 THUI REC	9.1	0.1									1	2												
L LAYER																								
82 PELT CAN	36.4	0.4			1	2			1	2			1	2									1	2
83 CLAD COR	18.2	0.2							1	2					1	2								
84 CLAD GRA	18.2	0.2							1	2					1	2								
85 PELT APH	18.2	0.2															1	2					1	2
86 CLAD DEF	9.1	0.1													1	2								
87 CLAD ECM	9.1	0.1													1	2								
88 CLAD MIT	9.1	0.1																					1	2
89 ICMA ERI	9.1	0.1													1	2								
PARM SUL	9.1	0.1	1	2																				
90 PELT MAL	9.1	0.1																			1	2		
91 PELT POL	9.1	0.1																					1	2
USNE SOR	9.1	0.1	1	2																				

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A6		

P.TREMULOIDES-POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 7 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R137		4K R113		4K R015		4K R082		4K R130		4K R071	
NUMBER OF SPECIES PER PLOT	33.0		34		36		29		35		38		26	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER														
1 POPU TRE	100.0	25.8	25	2	15	2	45	2	35	2	15	2	20	2
2 POPU BAL	66.7	12.5	25	2	10	2			15	2	25	2		
A2 LAYER														
POPU BAL	50.0	4.2	5	2			5	2					15	2
POPU TRE	50.0	4.2	10	2			5	2					10	2
3 PICE GLA	16.7	0.8			5	2								
4 SALI BEB	16.7	0.2					1	2						
E LAYER														
5 PYLA POL	83.3	3.5	5	2	5	2	1	2			5	2	5	2
6 EVER MES	33.3	1.0			5	2			1	2				
7 PARM SUL	33.3	1.0			5	2			1	2				
8 CETR HAL	16.7	0.2							1	2				
B1 LAYER														
9 ALNU CRI	33.3	0.3							1	2	1	2		
10 AMEL ALN	16.7	1.7											10	2
SALI BEB	16.7	0.8					5	2						
11 SALI PSE	16.7	0.5			3	2								
12 ALNU TEN	16.7	0.3									2	2		
B2 LAYER														
13 ROSA ACI	100.0	14.3	3	2	3	2	50	2	5	2	20	1	5	2
14 VIBU EDU	100.0	9.3	2	2	2	2	5	2	1	2	45	2	1	2
15 CORN STO	83.3	10.0	3	2	2	2	5	2			15	2	35	2
POPU TRE	66.7	4.5	15	2	10	2			1	2	1	2		
POPU BAL	66.7	1.7	5	2	1	2			3	2	1	2		
16 RUBU IDA	50.0	1.0			2	2	3	2			1	2		
17 RIBE OXY	50.0	0.7	2	2	1	2			1	2				
ALNU CRI	33.3	3.3							15	2	5	2		
18 SHEP CAN	33.3	2.5	5	2	10	2								
19 LONI INV	33.3	2.0							10	2			2	2
20 LONI DIO	33.3	0.3							1	2	1	2		
SALI BEB	33.3	0.3	1	2					1	2				
21 SYMP ALB	33.3	0.3									1	2	1	2
AMEL ALN	16.7	0.3											2	2
22 ROSA WOO	16.7	0.3			2	2								
ALNU TEN	16.7	0.2									1	2		
PICE GLA	16.7	0.2							1	2				
23 RIBE GLA	16.7	0.2									1	2		
24 RIBE TRI	16.7	0.2	1	2										
25 SALI MYR	16.7	0.2			1	2								
SALI PSE	16.7	0.2			1	2								
C LAYER														
26 PETA PAL	100.0	2.0	2	2	1	2	2	2	5	2	1	2	1	2
27 MERT PAN	83.3	5.0	5	2	2	2	10	2	8	2	5	2		
28 FRAG VIR	83.3	3.7	3	2	2	2	1	2	15	2			1	2
29 LATH OCH	83.3	1.5	3	2	2	2	1	2	1	2	2	2		
30 PYRO ASA	83.3	1.3	1	2			1	2	2	2	1	2	3	2
31 ASTE CIL	83.3	1.2	2	2	1	2			2	2	1	2	1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW A6		

P.TREMULOIDES-POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 7 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R137		4K R113		4K RO15		4K RO82		4K R130		4K RO71	
NUMBER OF SPECIES PER PLOT	33.0		34		36		29		35		38		26	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
32 VICI AME	83.3	1.0	2	2	1	2			1	2	1	2	1	2
33 EQUI ARV	83.3	0.8	1	2	1	2	1	2	1	2	1	2		
34 MITE NUD	83.3	0.8	1	2	1	2	1	2	1	2	1	2		
35 RUBU PUB	66.7	3.3			1	2	1	2	15	2			3	2
36 EPIL ANG	66.7	1.5	2	2	3	2	1	2			3	2		
37 ACHI MIL	66.7	0.7	1	2	1	2	1	2	1	2				
38 ACTA RUB	50.0	0.5	1	2			1	2			1	2		
39 CORN CAN	50.0	0.5			1	2			1	2	1	2		
40 GALI BOR	50.0	0.5	1	2			1	2					1	2
41 VIOL REN	50.0	0.5	1	2	1	2	1	2						
42 ARAL NUD	33.3	10.8									20	2	45	2
43 DELP GLA	33.3	1.7					5	2			5	2		
44 ASTE CON	33.3	0.7					1	2			3	2		
45 LINN BOR	33.3	0.7			3	2					1	2		
46 EQUI SYL	33.3	0.3			1	2					1	2		
47 GALI TRI	33.3	0.3							1	2	1	2		
48 MAIA CAN	33.3	0.3									1	2	1	2
49 MOEH LAT	33.3	0.3					1	2	1	2				
50 ORTH SEC	33.3	0.3			1	2					1	2		
51 GENT AMA	16.7	0.2			1	2								
52 HERA LAN	16.7	0.2									1	2		
53 SENE PAP	16.7	0.2							1	2				
54 SMIL STE	16.7	0.2											1	2
55 THAL SPA	16.7	0.2									1	2		
56 THAL VEN	16.7	0.2											1	2
G LAYER														
57 CALA CAN	50.0	1.2					3	2	1	2	3	2		
58 AGRO IRA	33.3	0.3			1	2							1	2
59 BROM CIL	16.7	1.7	10	2										
60 ELYM INN	16.7	0.3											2	2
D LAYER														
61 HYLO SPL	50.0	0.5	1	2			1	2	1	2				
62 EURH PUL	33.3	0.3	1	2					1	2				
63 AULA PAL	16.7	0.2	1	2										
64 BRAC CAM	16.7	0.2	1	2										
65 BRAC SAL	16.7	0.2					1	2						
66 DREP UNC	16.7	0.2	1	2										
67 PLAG CUS	16.7	0.2											1	2
L LAYER														
68 PELT CAN	33.3	0.3							1	2			1	2

```
 LEVEL    | ZONE  |ASSC|TYPE|
------------------------------|              BETULA PAPYRIFERA COMMUNITY                                          RESOURCE INVENTORY
ECOSYM UNIT|Bw      |    |    |                                                                                     EDMONTON, ALBERTA
           |        |    |    |                                                                             22:51:47      APR 24, 1985
                              |  PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)   TABLE  8  PAGE  1
------------------------------------------------------------------------------------------------------------------------------------
                              | AVERAGE  |    4K|
PLOT NUMBER                   |  VALUE   |  R104|
------------------------------------------------
NUMBER OF SPECIES PER PLOT    |   27.0   |    27|
------------------------------------------------
SPECIES                       |  %P   MC | %C SV|

        A1 LAYER              |----------|------|
   1 BETU PAP                 |100.0 75.0| 75  2|
        A2 LAYER              |----------|------|
     BETU PAP                 |100.0  5.0|  5  2|
         E LAYER              |----------|------|
   2 CETR HAL                 |100.0  5.0|  5  2|
   3 CETR PIN                 |100.0  5.0|  5  2|
   4 EVER MES                 |100.0  5.0|  5  2|
   5 HYPO PHY                 |100.0  5.0|  5  2|
   6 PYLA POL                 |100.0  5.0|  5  2|
        B1 LAYER              |----------|------|
   7 ALNU CRI                 |100.0  2.0|  2  2|
   8 SALI BEB                 |100.0  2.0|  2  2|
        B2 LAYER              |----------|------|
   9 RIBE AME                 |100.0  1.0|  1  2|
  10 RIBE OXY                 |100.0  1.0|  1  2|
  11 ROSA ACI                 |100.0  1.0|  1  2|
  12 RUBU IDA                 |100.0  1.0|  1  2|
         C LAYER              |----------|------|
  13 EQUI ARV                 |100.0 35.0| 35  2|
  14 CORN CAN                 |100.0  1.0|  1  2|
  15 EPIL ANG                 |100.0  1.0|  1  2|
  16 LINN BOR                 |100.0  1.0|  1  2|
  17 MERT PAN                 |100.0  1.0|  1  2|
  18 MITE NUD                 |100.0  1.0|  1  2|
  19 PETA PAL                 |100.0  1.0|  1  2|
  20 RUBU PUB                 |100.0  1.0|  1  2|
         G LAYER              |----------|------|
  21 CALA CAN                 |100.0  5.0|  5  2|
         D LAYER              |----------|------|
  22 AULA PAL                 |100.0  1.0|  1  2|
  23 BRAC CAM                 |100.0  1.0|  1  2|
  24 BRAC STA                 |100.0  1.0|  1  2|
  25 PTIL CRI                 |100.0  1.0|  1  2|
         L LAYER              |----------|------|
  26 CLAD MUL                 |100.0  1.0|  1  2|
                              -------------------
```

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW PB1		

POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 9 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R040		4K R041		4K R101		4K R079		4K R036		4K R037	
NUMBER OF SPECIES PER PLOT	23.8		26		14		30		16		25		32	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER														
1 POPU BAL	100.0	37.5	30	2	30	2	45	2	45	2	30	2	45	2
2 POPU TRE	16.7	0.2									1	2		
A2 LAYER														
3 ALNU TEN	50.0	14.2	60	2	5	2							20	2
POPU BAL	50.0	1.8			5	2			1	2	5	2		
4 SALI BEB	16.7	1.7											10	2
5 SALI DIS	16.7	0.8											5	2
E LAYER														
6 PYLA POL	100.0	5.0	5	2	5	2	5	2	5	2	5	2	5	2
7 CETR HAL	33.3	1.7	5	2			5	2						
8 EVER MES	33.3	1.7	5	2			5	2						
9 PARM SUL	33.3	1.7	5	2	5	2								
10 CETR PIN	16.7	0.8	5	2										
11 HYPO PHY	16.7	0.8					5	2						
B1 LAYER														
SALI DIS	33.3	0.5					2	2			1	2		
SALI BEB	16.7	2.5					15	2						
ALNU TEN	16.7	0.8			5	2								
POPU BAL	16.7	0.2									1	2		
POPU TRE	16.7	0.2									1	2		
B2 LAYER														
12 ROSA ACI	100.0	10.5	5	2	15	2	35	2	1	2	5	2	2	1
13 CORN STO	83.3	16.5	4	2	25	2	20	2			35	2	15	2
14 VIBU EDU	83.3	9.5	3	2	2	2			1	2	50	2	1	2
15 RIBE OXY	66.7	0.7	1	2					1	2	1	2	1	2
ALNU TEN	50.0	1.5			5	2	1	2					3	2
16 RUBU IDA	33.3	0.7					3	2					1	2
17 AMEL ALN	33.3	0.3	1	2					1	2				
18 RIBE TRI	33.3	0.3					1	2	1	2				
19 SYMP ALB	33.3	0.3					1	2	1	2				
20 ELAE COM	16.7	1.7			10	2								
21 BETU PAP	16.7	0.2					1	2						
22 LONI DIO	16.7	0.2									1	2		
23 LONI INV	16.7	0.2	1	2										
24 PICE GLA	16.7	0.2									1	2		
POPU BAL	16.7	0.2					1	2						
SALI BEB	16.7	0.2											1	2
SALI DIS	16.7	0.2											1	2
25 SHEP CAN	16.7	0.2											1	2
C LAYER														
26 EPIL ANG	66.7	13.0	1	2			15	3	60	2	2	2		
27 MERT PAN	66.7	2.5	1	2			7	2			5	2	2	2
28 RUBU PUB	66.7	1.2					2	2	3	2	1	2	1	2
29 ASTE CIL	66.7	0.7	1	2			1	2	1	2			1	2
30 PETA PAL	66.7	0.7	1	2	1	2					1	2	1	2
31 VICI AME	66.7	0.7	1	2	1	2	1	2					1	2
32 EQUI ARV	50.0	0.8			1	2					3	2	1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW PB1		

POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 9 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R040		4K R041		4K R101		4K R079		4K R036		4K R037	
NUMBER OF SPECIES PER PLOT	23.8		26		14		30		16		25		32	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
33 FRAG VIR	50.0	0.5	1	2			1	2					1	2
34 GALI BOR	50.0	0.5	1	2			1	2			1	2		
35 ARAL NUD	33.3	8.3	30	2					20	2				
36 ACHI MIL	33.3	0.3	1	2									1	2
37 GALI TRI	33.3	0.3									1	2	1	2
38 LATH OCH	33.3	0.3							1	2			1	2
39 MITE NUD	33.3	0.3							1	2			1	2
40 MOEH LAT	33.3	0.3					1	2					1	2
41 VIOL REN	33.3	0.3									1	2	1	2
42 EQUI PRA	16.7	1.7					10	2						
43 MAIA CAN	16.7	0.5					3	2						
44 EQUI SYL	16.7	0.3									2	2		
45 ACTA RUB	16.7	0.2	1	2										
46 DELP GLA	16.7	0.2									1	2		
47 HIER UMB	16.7	0.2	1	2										
48 PETA SAG	16.7	0.2											1	2
49 PYRO ASA	16.7	0.2											1	2
50 SMIL STE	16.7	0.2					1	2						
51 TARA OFF	16.7	0.2	1	2										
52 THAL VEN	16.7	0.2					1	2						
G LAYER														
53 CALA CAN	33.3	0.5					2	2			1	2		
54 AGRO TRA	33.3	0.3	1	2									1	2
D LAYER														
55 PLAG CUS	33.3	0.3					1	2			1	2		
56 AULA PAL	16.7	0.2											1	2
57 BRAC CAM	16.7	0.2							1	2				
58 HYLO SPL	16.7	0.2					1	2						
L LAYER														
59 CLAD CRI	16.7	0.2											1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW SwA		

PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA SPP.

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 10 PAGE 1

	AVERAGE		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K	
PLOT NUMBER	VALUE		R086		R102		R056		R119		R058		R031		R120		R097		R069		R078		R128	
NUMBER OF SPECIES PER PLOT	33.9		39		30		40		43		22		34		35		33		32		26		39	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																								
1 POPU TRE	100.0	18.5	25	2	10	2	20	2	5	2	15	2	35	2	30	2	35	2	4	2	10	2	15	2
2 PICE GLA	90.9	19.6	35	2	10	2	30	2	15	2	35	2	20	2	10	2			6	2	45	2	10	2
3 POPU BAL	18.2	3.2							5	2							30	2						
A2 LAYER																								
PICE GLA	90.9	15.0	10	2	25	2	10	2			10	2	10	2	10	2	30	2	50	2	5	2	5	2
POPU BAL	27.3	0.4	2	2			1	2	1	2														
POPU TRE	18.2	0.2													1	2			1	2				
4 PICE MAR	9.1	0.5			5	2																		
5 BETU PAP	9.1	0.1											1	2										
E LAYER																								
6 PYLA POL	90.9	4.5	5	2	5	2	5	2	5	2			5	2	5	2	5	2	5	2	5	2	5	2
7 PARM SUL	90.9	3.5	5	2	5	2	1	2	1	2	5	2	5	2	1	2			5	2	5	2	5	2
8 USNE SOR	81.8	3.8	5	2	5	2	5	2	1	2			5	2	1	2	5	2	5	2	10	2		
9 EVER MES	72.7	2.9	5	2	5	2	1	2	1	2	5	2	5	2			5	2			5	2		
10 HYPO PHY	63.6	3.2	5	2	5	2					5	2					5	2	5	2	5	2	5	2
11 CETR HAL	63.6	2.1	5	2					1	2			5	2	1	2			1	2	5	2	5	2
12 USNE ALP	54.5	2.4	5	2	5	2	5	2			5	2					1	2					5	2
13 CETR PIN	36.4	1.1	5	2	5	2			1	2									1	2				
14 PTIL PUL	27.3	1.4	5	2					5	2													5	2
15 BRAC SAL	9.1	0.5			5	2																		
16 BRYO FUS	9.1	0.5									5	2												
18 EURH PUL	9.1	0.5																					5	2
19 ORTH OBT	9.1	0.5					5	2																
20 AMBL SER	9.1	0.1			1	2																		
21 ORTH SPE	9.1	0.1			1	2																		
B1 LAYER																								
PICE GLA	27.3	5.3	45	2											3	2			10	2				
22 ALNU CRI	9.1	0.2	2	2																				
POPU BAL	9.1	0.1							1	2														
B2 LAYER																								
POPU TRE	100.0	1.2	2	2	1	2	1	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
23 ROSA ACI	90.9	7.2	10	2	5	2	15	2			15	2	10	2	5	2	3	2	5	2	10	2	1	2
24 VIBU EDU	90.9	4.5	5	2			10	2	7	2	1	2	15	2	1	2	1	2	8	2	1	2	1	2
25 SHEP CAN	54.5	1.3			1	2	5	2					3	2			1	2	1	2	3	2		
PICE GLA	36.4	0.7					1	2			3	2			3	2							1	2
POPU BAL	36.4	0.5	1	2					2	2									1	2			2	2
26 RIBE OXY	27.3	0.8	1	2					7	2									1	2				
27 LONI INV	27.3	0.3							1	2							1	2					1	2
28 RIBE TRI	18.2	0.2																			1	2	1	2
29 ROSA WOO	9.1	1.4							15	2														
30 CORN STO	9.1	0.9							10	2														
31 SYMP ALB	9.1	0.2															2	2						
32 LEDU GRO	9.1	0.1													1	2								
33 LONI DIO	9.1	0.1											1	2										
PICE MAR	9.1	0.1			1	2																		
34 RUBU IDA	9.1	0.1							1	2														

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW SwA		

PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA SPP.

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 10 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R086		4K R102		4K R056		4K R119		4K R058		4K R031		4K R120		4K R097		4K R069		4K R078		4K R128	
NUMBER OF SPECIES PER PLOT	33.9		39		30		40		43		22		34		35		33		32		26		39	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
35 SALI PYR	9.1	0.1													1	2								
C LAYER																								
36 CORN CAN	100.0	7.5	1	2	1	2	5	2	2	2	5	2	10	2	40	2	5	2	2	2	7	2	4	2
37 LINN BOR	100.0	2.5	5	2	1	2	2	2	5	2	1	2	2	2	2	2	3	2	2	2	2	2	2	2
38 RUBU PUB	72.7	1.2	2	2			3	2	1	2	1	2	2	2			2	2			1	2	1	2
39 FRAG VIR	72.7	0.7	1	2	1	2	1	2	1	2			1	2	1	2	1	2					1	2
40 EPIL ANG	63.6	1.2	1	2			1	2	5	2	1	2			3	2			1	2			1	2
41 LATH OCH	63.6	0.6	1	2			1	2	1	2			1	2	1	2	1	2			1	2		
42 MITE NUD	54.5	1.3	1	2					3	2			1	2			3	2	2	2			4	2
43 PETA PAL	54.5	1.2	5	2			1	2					1	2	1	2	1	2					4	2
44 ORTH SEC	54.5	0.5	1	2	1	2	1	2	1	2			1	2			1	2						
45 MERT PAN	45.5	1.5					1	2	7	2					1	2	5	2					2	2
46 GALI BOR	45.5	0.5					1	2	1	2	1	2					1	2			1	2		
47 VIOL REN	45.5	0.5	1	2			1	2					1	2			1	2					2	2
48 PYRO ASA	36.4	0.5	1	2					2	2			1	2									1	2
49 EQUI ARV	27.3	7.0							1	2							1	2					75	2
50 EQUI SYL	27.3	0.4	1	2									1	2									2	2
51 ASTE CIL	27.3	0.3							1	2					1	2	1	2						
52 MAIA CAN	27.3	0.3					1	2					1	2					1	1				
53 ACTA RUB	18.2	0.7	7	2					1	2														
54 ARAL NUD	18.2	0.7							5	2									3	2				
55 ASTE CON	18.2	0.5							1	2									4	2				
56 VACC VIT	18.2	0.3			1	2									2	2								
57 ACHI MIL	18.2	0.2													1	2							1	2
RUBU IDA	9.1	0.3																	3	2				
58 EQUI PRA	9.1	0.2																					2	2
59 AGOS GLA	9.1	0.1													1	2								
60 ASTR AME	9.1	0.1					1	2																
61 GEOC LIV	9.1	0.1			1	2																		
62 LATH VEN	9.1	0.1					1	2																
63 MONE UNI	9.1	0.1	1	2																				
64 PYRO CHL	9.1	0.1											1	2										
65 THAL VEN	9.1	0.1													1	2								
66 VICI AME	9.1	0.1															1	2						
G LAYER																								
67 ELYM INN	54.5	3.4			1	2	25	2	1	2	1	2	2	2							7	2		
68 CALA CAN	27.3	0.3													1	2					1	2	1	2
69 CALA INE	18.2	0.2					1	2											1	2				
70 AGRO TRA	9.1	0.1													1	2								
71 CALA STR	9.1	0.1							1	2														
D LAYER																								
72 HYLO SPL	100.0	35.6	20	2	40	2	65	2	2	2	50	2	10	2	50	2	10	2	60	2	30	2	55	2
73 PLEU SCH	81.8	8.1	20	2	10	2			1	2	10	2			10	2	1	2	35	2	1	2	1	2
EURH PUL	72.7	0.7	1	2			1	2			1	2	1	2	1	2	1	2	1	2	1	2		
BRAC SAL	45.5	0.5	1	2									1	2	1	2			1	2			1	2
74 AULA PAL	27.3	0.3			1	2									1	2					1	2		
75 BRAC CAM	18.2	0.4					2	2	2	2														
76 BRAC STA	18.2	0.2					1	2															1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW SwA		

PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA SPP.

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 10 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K RO86		4K R102		4K RO55		4K R119		4K RO58		4K RO31		4K R120		4K RO97		4K RO69		4K RO78		4K R128	
NUMBER OF SPECIES PER PLOT	33.9		39		30		40		43		22		34		35		33		32		26		39	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
77 PLAG CUS	18.2	0.2							1	2			1	2										
78 PTIL CRI	18.2	0.2					1	2															1	2
79 DREP UNC	9.1	0.3					3	2																
80 MNIU SPI	9.1	0.1					1	2																
81 PLAG DRU	9.1	0.1																					1	2
82 THUI REC	9.1	0.1																					1	2
L LAYER																								
83 PELT CAN	45.5	0.5	1	2			1	2									1	2	1	2	1	2		
84 PELT APH	36.4	0.4			1	2					1	2	1	2	1	2								
85 PELT POL	18.2	0.2					1	2	1	2														
86 CLAD CEN	9.1	0.1																	1	2				
87 CLAD GRA	9.1	0.1			1	2																		
88 CLAD MIT	9.1	0.1											1	2										

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Sw		

PICEA GLAUCA/HYLOCOMIUM SPLENDENS-PLEUROZIUM SCHREBERI

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 11 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R025		4K R026		4K R027		4K R084		4K R136		4K R123		4K R010		4K R061		4K R107		4K R135		4K R118		4K R133		4K R127		4K R083	
NUMBER OF SPECIES PER PLOT	30.1		34		17		35		21		34		32		37		35		36		28		26		29		22		35	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																														
1 PICE GLA	100.0	31.2	45	2	50	2	30	2	65	2	10	2	30	2	15	2	30	2	30	2	20	2	40	2	7	2	10	2	55	2
2 ABIE BAL	14.3	2.0																							3	2	25	2		
3 POPU TRE	14.3	0.9											10	2			3	2												
4 PINU CON	7.1	0.2																			3	2								
5 LARI LAR	7.1	0.1																	2	2										
6 POPU BAL	7.1	0.1							1	2																				
A2 LAYER																														
PICE GLA	100.0	11.5	5	2	15	2	1	2	10	2	20	2	10	2	20	2	5	2	5	2	5	2	5	2	50	2	5	2	5	2
7 BETU PAP	28.6	1.5									1	2					5	2	5	2									10	2
ABIE BAL	21.4	3.2																							15	2	15	2	15	2
POPU TRE	14.3	0.4											1	2	5	2														
8 SALI DIS	7.1	1.1									15	2																		
E LAYER																														
9 PARM SUL	92.9	3.9	10	2	5	2	5	2			5	2	1	2	5	2	5	2	5	2	1	2	5	2	1	2	1	2	5	2
10 USNE ALP	78.6	4.4	10	2	5	2	5	2	5	2			1	2	10	2	5	2			5	2			5	2	1	2	10	2
11 EVER MES	78.6	3.1	5	2			5	2	5	2	1	2	1	2	5	2	5	2	5	2			5	2	1	2			5	2
12 USNE SOR	78.6	3.1			5	2	5	2	5	2			1	2			5	2	5	2	1	2	5	2	5	2	1	2	5	2
13 HYPO PHY	64.3	2.4	5	2	5	2	5	2	5	2	1	2			5	2			1	2	1	2							5	2
14 CETR HAL	50.0	2.2	5	2	5	2					5	2			5	2	5	2	5	2					1	2				
15 CETR PIN	42.8	0.7					5	2			1	2	1	2									1	2	1	2	1	2		
16 PTIL PUL	21.4	1.1	5	2			5	2																			5	2		
17 USNE HIR	14.3	0.8			10	2							1	2																
18 PYLA POL	14.3	0.4					5	2					1	2																
19 BRYO FUS	14.3	0.1											1	2							1	2								
20 USNE SCA	7.1	0.4																					5	2						
21 USNE SP	7.1	0.1									1	2																		
B1 LAYER																														
22 ALNU CRI	14.3	0.3																	1	2									3	2
23 SALI BEB	14.3	0.1													1	2			1	2										
BETU PAP	7.1	0.4																	5	2										
PICE GLA	7.1	0.1															2	2												
B2 LAYER																														
24 VIBU EDU	85.7	2.5			1	2	1	2	1	2	1	2	5	2	3	2	1	2	1	2	7	2	10	2			1	2	3	2
25 ROSA ACI	71.4	3.1			1	2	3	2			1	2			3	2	1	2	5	2	1	2	2	2	1	2			25	2
26 RIBE OXY	35.7	0.4	1	2									1	2	1	2	1	2	1	2										
27 RIBE TRI	35.7	0.4	1	2							1	2			1	2			1	2	1	2								
POPU TRE	28.6	0.4	1	2									2	2	1	2	1	2												
28 RUBU IDA	28.6	0.3					1	2			1	2									1	2					1	2		
ABIE BAL	21.4	1.2																							1	2	1	2	15	2
29 CORN STO	21.4	0.2	1	2							1	2							1	2										
30 LONI INV	21.4	0.2					1	2											1	2									1	2
31 LEDU GRO	14.3	0.3															3	2											1	2
ALNU CRI	14.3	0.1											1	2					1	2										
32 AMEL ALN	14.3	0.1											1	2	1	2														
PICE GLA	14.3	0.1													1	2	1	2												
33 RIBE LAC	14.3	0.1					1	2															1	2						
34 ROSA WOO	7.1	0.2											3	2																

LEVEL	ZONE		ASSC	TYPE
ECOSYM UNIT	MW	Sw		

PICEA GLAUCA/HYLOCOMIUM SPLENDENS-PLEURОZIUM SCHREBERI

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 11 PAGE 2

	AVERAGE		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K		4K	
PLOT NUMBER	VALUE		R025		R026		R027		R084		R136		R123		R010		R061		R107		R135		R118		R133		R127		R083	
NUMBER OF SPECIES PER PLOT	30.1		34		17		35		21		34		32		37		35		36		28		26		29		22		35	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
35 LONI DIO	7.1	0.1													1	1														
POPU BAL	7.1	0.1	1	2																										
SALI DIS	7.1	0.1									1	2																		
36 SHEP CAN	7.1	0.1													1	2														
37 SORB SCO	7.1	0.1																									1	2		
C LAYER																														
38 LINN BOR	100.0	1.9	1	2	1	2	7	2	1	2	1	2	1	2	1	2	1	2	1	2	3	2	4	2	1	2	2	2	1	2
39 CORN CAN	85.7	3.4			1	2			1	2	1	2	10	2	2	2	3	2	10	2	10	2	5	2	1	2	1	2	2	2
40 RUBU PUB	78.6	1.6	1	2			2	2	1	2	1	2	1	2	3	2	1	2	5	2	1	2	5	2					2	2
41 MITE NUD	57.1	0.8	1	2			1	2			1	2	1	2					2	2	2	2					1	2	2	2
42 MERT PAN	50.0	0.9					2	2					1	2	2	2			1	2			5	2	1	2			1	2
43 EQUI ARV	42.9	7.6	1	2			15	2			1	2							80	2			5	2					5	2
44 EPIL ANG	35.7	0.4					1	2							1	2	1	2	1	2			2	2						
45 EQUI SYL	35.7	0.4	1	2			1	2			1	2													1	2			1	2
46 GALI BOR	35.7	0.4							1	2			1	2	1	2							1	2					1	2
47 MAIA CAN	35.7	0.4							1	2			1	2	1	2	1	2			2	2								
48 VACC VIT	28.6	0.5											1	2							4	2			1	2			1	2
49 PETA PAL	28.6	0.4	1	2																			3	2	1	2			1	2
50 ORTH SEC	28.6	0.3													1	2					1	2	1	2	1	2				
51 VIOL REN	28.6	0.3	1	2			1	2			1	2			1	2														
52 ARAL NUD	21.4	0.2									1	2			1	2					1	2								
53 PYRO ASA	21.4	0.2	1	2					1	2															1	2				
54 PYRO CHL	21.4	0.2	1	2											1	2											1	2		
55 EQUI PRA	14.3	5.4					60	2															15	2						
56 ACTA RUB	14.3	0.1					1	2							1	2														
57 DELP GLA	14.3	0.1					1	2															1	2						
58 FRAG VIR	14.3	0.1	1	2											1	2														
59 GEOC LIV	14.3	0.1											1	2							1	2								
60 GOOD REP	14.3	0.1															1	2							1	2				
61 CIRC ALP	7.1	0.2					3	2																						
62 ARCT UVA	7.1	0.1															1	2												
63 ASTE CIL	7.1	0.1	1	2																										
64 ASTR AME	7.1	0.1	1	2																										
65 CALT PAL	7.1	0.1																	1	2										
66 DRYO CAR	7.1	0.1					1	2																						
67 GALI TRI	7.1	0.1					1	2																						
68 GYMN DRY	7.1	0.1																											1	2
69 LATH OCH	7.1	0.1											2	2																
70 LATH VEN	7.1	0.1	1	2																										
71 LYCO ANN	7.1	0.1																			1	2								
72 MOEH LAT	7.1	0.1					1	2																						
73 MONE UNI	7.1	0.1	1	2																										
74 SMIL TRI	7.1	0.1																	1	2										
75 SPIR ROM	7.1	0.1							1	2																				
76 TRIE BOR	7.1	0.1																	1	2										
G LAYER																														
77 CALA CAN	21.4	0.3									1	2							1	2									2	2
78 ELYM INN	14.3	0.1													1	2							5	2						

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Sw		

PICEA GLAUCA/HYLOCOMIUM SPLENDENS-PLEUROZIUM SCHREBERI

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 11 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K R025		4K R026		4K R027		4K R084		4K R136		4K R123		4K R010		4K R061		4K R107		4K R135		4K R118		4K R133		4K R127		4K R083	
NUMBER OF SPECIES PER PLOT	30.1		34		17		35		21		34		32		37		35		36		28		26		29		22		35	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
79 CALA INE	14.3	0.1													1	2	1	2												
80 CALA STR	7.1	0.4																			5	2								
81 CARE DIS	7.1	0.1									1	2																		
D LAYER																														
82 HYLO SPL	100.0	47.3	80	2	80	2	70	2	5	2	15	2	90	2	35	2	60	2	40	2	35	2	20	2	92	2	30	2	10	2
83 PLEU SCH	100.0	16.7	1	2	8	2	5	2	80	2	1	2	5	2	5	2	20	2	10	2	5	2	30	2	1	2	8	2	55	2
84 PTIL CRI	92.9	14.3	1	2	2	2	15	2	5	2	1	2	2	2	1	2			2	2	55	2	50	2	1	2	60	2	5	2
85 PLAG CUS	35.7	0.4					1	2			1	2			1	2	1	2									1	2		
86 AULA PAL	28.6	0.3	1	2													1	2	1	2									1	2
87 DICR FRA	28.6	0.3			1	2					1	2															1	2	1	2
88 EURH PUL	28.6	0.3					1	2	1	2							1	2											1	2
89 BRAC SAL	21.4	0.2	1	2					1	2	1	2																		
90 DICR FUS	14.3	0.1																			1	2			1	2				
91 RHIZ PSE	14.3	0.1									1	2							1	2										
92 DICR UND	7.1	0.1															1	2												
LYCO ANN	7.1	0.1																											1	2
93 MNIU SPI	7.1	0.1																							1	2				
94 PLAG ASP	7.1	0.1																											1	2
95 PLAG DRU	7.1	0.1			1	2																								
96 PLAG ELL	7.1	0.1																	1	2										
97 POLY COM	7.1	0.1																			1	2								
98 POLY JUN	7.1	0.1															1	2												
99 POLY STR	7.1	0.1							1	2																				
L LAYER																														
100 PELT APH	21.4	0.2											1	2			1	2							1	2				
101 PELT CAN	21.4	0.2									1	2					1	2					1	2						
102 CLAD COR	14.3	0.1															1	2							1	2				
103 CLAD RAN	14.3	0.1	1	2																					1	2				
104 CLAD GRA	7.1	0.1	1	2																										
105 PELT POL	7.1	0.1															1	2												

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW PL1		

PINUS CONTORTA/ALNUS CRISPA

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 12 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R089		4K R011		1W R001	
NUMBER OF SPECIES PER PLOT	28.0		28		29		27	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
A1 LAYER								
1 PINU CON	100.0	31.7	35	2	25	2	35	2
A2 LAYER								
PINU CON	66.7	3.3	5	2			5	2
2 PICE GLA	33.3	10.0			10	2		
3 POPU TRE	33.3	0.3					1	2
E LAYER								
4 CETR HAL	100.0	2.3	1	2	1	2	5	2
5 HYPO PHY	100.0	2.3	1	2	1	2	5	2
6 CETR PIN	100.0	1.0	1	2	1	2	1	2
7 EVER MES	100.0	1.0	1	2	1	2	1	2
8 BRYO FUS	66.7	3.3	5	2			5	2
9 USNE SOR	66.7	0.7			1	2	1	2
10 USNE HIR	33.3	1.7					5	2
11 PARM SUL	33.3	0.3	1	2				
12 USNE CAV	33.3	0.3			1	2		
13 USNE SP	33.3	0.3	1	2				
B1 LAYER								
14 ALNU CRI	100.0	25.0	45	2	5	2	25	2
B2 LAYER								
15 VACC MYR	100.0	2.0	1	2	2	2	3	2
16 LEDU GRO	66.7	5.3	1	2	15	2		
PICE GLA	66.7	3.7	1	2	10	2		
ALNU CRI	66.7	2.7	3	2			5	2
17 PICE MAR	33.3	1.7			5	2		
18 VIBU EDU	33.3	0.7					2	2
19 BETU PAP	33.3	0.3					1	2
20 ROSA ACI	33.3	0.3			1	2		
21 ROSA WOO	33.3	0.3	1	2				
22 RUBU IDA	33.3	0.3					1	2
C LAYER								
23 VACC VIT	100.0	19.3	3	2	25	2	30	2
24 LINN BOR	100.0	9.7	1	2	25	2	3	2
25 EPIL ANG	100.0	1.0	1	2	1	2	1	2
26 MAIA CAN	66.7	2.3	2	2			5	2
27 ARAL NUD	33.3	1.7					5	2
28 CORN CAN	33.3	1.7			5	2		
29 VACC CAE	33.3	0.7			2	2		
30 GEOC LIV	33.3	0.3			1	2		
31 ORTH SEC	33.3	0.3					1	2
32 PYRO CHL	33.3	0.3					1	2
G LAYER								
33 CALA STR	100.0	1.0	1	2	1	2	1	2
34 ELYM INN	33.3	0.3			1	2		
D LAYER								
35 PLEU SCH	100.0	60.0	45	2	70	2	65	2
36 PTIL CRI	100.0	10.0	15	2	10	2	5	2
37 HYLO SPL	66.7	3.7	1	2	10	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW PL1		

PINUS CONTORTA/ALNUS CRISPA

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 12 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K RO89		4K RO11		4K RO91	
NUMBER OF SPECIES PER PLOT	28.0		29		29		27	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
38 DICR POL	33.3	0.3	1	2				
39 TETR MNI	33.3	0.3			1	2		
L LAYER								
40 CLAD MIT	66.7	0.7	1	2			1	2
41 PELT APH	66.7	0.7	1	2	1	2		
42 CLAD ARB	33.3	0.3			1	2		
43 CLAD GRA	33.3	0.3			1	2		
44 CLAD RAN	33.3	0.3	1	2				
DICR POL	33.3	0.3	1	2				

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW	PIS	b

PINUS CONTORTA-PICEA MARIANA/LEDUM GROENLANDICUM/FEATHERMOSS

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 13 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R100		4K R092		1K R0[illegible]1		4K R141		4K R001	
NUMBER OF SPECIES PER PLOT	30.2		32		29		2[illegible]		29		32	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER												
1 PINU CON	100.0	22.0	30	2	30	2	20	2	20	2	10	2
2 PICE GLA	20.0	4.0									20	2
A2 LAYER												
3 PICE MAR	80.0	21.2	35	2	60	2	10	2	1	2		
PINU CON	60.0	1.8			5	2			2	2	2	1
PICE GLA	20.0	1.0									5	2
4 POPU TRE	20.0	0.2	1	2								
E LAYER												
5 BRYO FUS	80.0	2.4	1	2	5	2	5	2	1	2		
6 EVER MES	80.0	0.8	1	2	1	2	1	2			1	2
7 CETR HAL	60.0	3.0	5	2	5	2	5	2				
8 USNE SOR	60.0	3.0	5	2	5	2	5	2				
9 HYPO PHY	60.0	2.2	1	2	5	2	5	2				
10 CETR PIN	60.0	1.4	1	2	5	2			1	2		
11 PARM SUL	60.0	1.4	1	2	5	2			1	2		
12 USNE ALP	20.0	1.0					5	2				
13 PTIL PUL	20.0	0.2	1	2								
14 USNE HIR	20.0	0.2	1	2								
B1 LAYER												
PICE MAR	80.0	3.8	3	2	10	2	5	2	1	2		
15 ALNU CRI	40.0	2.0					5	2	5	2		
16 SALI SCO	20.0	0.4									2	2
PICE GLA	20.0	0.2	1	2								
B2 LAYER												
17 LEDU GRO	100.0	7.8	1	2	1	2	20	2	2	2	15	2
18 VACC MYR	100.0	3.2	2	2	3	2	5	2	1	2	5	2
PICE MAR	80.0	14.6	3	2	2	2	3	2	65	2		
19 ROSA ACI	40.0	0.8			1	2	3	2				
20 SALI BEB	40.0	0.6					2	2			1	2
21 ABIE BAL	20.0	2.0									10	2
ALNU CRI	20.0	1.2							6	2		
22 BETU GLA	20.0	0.2					1	2				
23 BETU OCC	20.0	0.2									1	2
PICE GLA	20.0	0.2	1	2								
24 PRUN VIR	20.0	0.2							1	2		
C LAYER												
25 VACC VIT	100.0	7.4	2	2	5	2	15	2	10	2	5	2
26 CORN CAN	100.0	4.0	1	2	3	2	5	2	1	2	10	2
27 LINN BOR	60.0	1.8	3	2	1	2					5	2
28 VACC CAE	60.0	1.2	1	2			3	2			2	2
29 EQUI SYL	60.0	0.6	1	2					1	2	1	2
30 PETA PAL	60.0	0.6			1	2	1	2			1	2
31 GEOC LIV	40.0	0.4			1	2					1	2
32 MAIA CAN	40.0	0.4			1	2	1	2				
33 LYCO ANN	20.0	0.6									3	2
G LAYER												
34 CALA STR	40.0	0.4	1	2							1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT MW	PIS	b	

PINUS CONTORTA-PICEA MARIANA/LEDUM GROENLANDICUM/FEATHERMOSS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 13 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R100		4K R092		4K R091		4K R141		4K R001	
NUMBER OF SPECIES PER PLOT	30.2		32		29		29		29		32	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
35 ELYM INN	40.0	0.4			1	2	1	2				
36 CALA CAN	20.0	0.2							1	2		
D LAYER												
37 PTIL CRI	100.0	8.4	1	2	5	2	5	2	1	2	30	2
38 PLEU SCH	80.0	32.0	50	2	40	2	25	2			45	2
39 HYLO SPL	80.0	13.2	20	2	5	2	40	2	1	2		
40 POLY COM	40.0	0.6							1	2	2	2
41 AULA PAL	20.0	0.2							1	2		
42 DICR FUS	20.0	0.2									1	2
43 DICR POL	20.0	0.2	1	2								
44 POHL NUT	20.0	0.2									1	2
45 PTIL CIL	20.0	0.2			1	2						
PTIL PUL	20.0	0.2									1	2
L LAYER												
46 CLAD MIT	80.0	4.6	5	2	15	2	2	2	1	2		
47 PELT APH	80.0	1.2	1	2	1	2	3	2	1	2		
48 CLAD GRA	60.0	0.6	1	2	1	2			1	2		
49 STER TOM	60.0	0.6	1	2			1	2	1	2		
50 CLAD COR	40.0	0.4							1	2	1	2
PARM SUL	20.0	0.4									2	2
USNE ALP	20.0	0.4									2	2
CETR PIN	20.0	0.2									1	2
51 CLAD CHL	20.0	0.2									1	2
53 CLAD CRI	20.0	0.2					1	2				
HYPO PHY	20.0	0.2									1	2
54 ICMA ERI	20.0	0.2							1	2		
55 PELT CAN	20.0	0.2							1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW PLA		

PINUS CONTORTA-POPULUS TREMULOIDES

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 14 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R018		4K R070	
NUMBER OF SPECIES PER PLOT	26.0		27		25	
SPECIES	%P	MC	%C	SV	%C	SV
A1 LAYER						
1 PINU CON	100.0	25.0	10	2	40	2
2 POPU TRE	50.0	12.5	25	2		
3 POPU BAL	50.0	2.5	5	2		
A2 LAYER						
POPU TRE	100.0	7.5	5	2	10	2
4 PICE GLA	50.0	7.5	15	2		
E LAYER						
5 CETR PIN	50.0	0.5			1	2
6 PARM SUL	50.0	0.5	1	2		
7 PYLA POL	50.0	0.5	1	2		
8 USNE SOR	50.0	0.5	1	2		
B1 LAYER						
PICE GLA	50.0	0.5			1	2
9 SALI BEB	50.0	0.5			1	2
B2 LAYER						
10 ROSA ACI	100.0	10.0	10	2	10	2
11 SHEP CAN	100.0	2.0	1	2	3	2
12 VIBU EDU	50.0	5.0	10	2		
SALI BEB	50.0	0.5			1	2
C LAYER						
13 CORN CAN	100.0	1.5	1	2	2	2
14 EPIL ANG	100.0	1.0	1	2	1	2
15 FRAG VIR	100.0	1.0	1	2	1	2
16 LATH OCH	100.0	1.0	1	2	1	2
17 PETA PAL	100.0	1.0	1	2	1	2
18 RUBU PUB	100.0	1.0	1	2	1	2
19 EQUI SYL	50.0	2.5	5	2		
20 ASTE CIL	50.0	1.0			2	2
21 ACHI MIL	50.0	0.5			1	2
22 ARNI COR	50.0	0.5			1	2
23 ASTE CON	50.0	0.5	1	2		
24 GALI BOR	50.0	0.5			1	2
25 LINN BOR	50.0	0.5	1	2		
26 PYRO ASA	50.0	0.5	1	2		
27 VICI AME	50.0	0.5			1	2
28 VIOL REN	50.0	0.5	1	2		
G LAYER						
29 ELYM INN	100.0	5.5	1	2	10	2
30 CALA INE	50.0	2.5			5	2
D LAYER						
31 HYLO SPL	100.0	30.5	1	2	60	2
32 PLEU SCH	100.0	3.0	1	2	5	2
33 AULA PAL	50.0	0.5			1	2
34 BRAC SAL	50.0	0.5	1	2		
35 EURH PUL	50.0	0.5	1	2		
L LAYER						
36 PELT APH	50.0	0.5			1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Sb		

PICEA MARIANA/LEDUM GROENLANDICUM/MOSS

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 15 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K RO85		4K RO13		4K RO24		4K R110		4K RO05		4K RO03		4K R105		4K RO87		4K R129		4K RO90		4K RO95	
NUMBER OF SPECIES PER PLOT	28.6		28		22		28		28		32		23		37		31		29		41		16	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																								
1 PICE MAR	54.5	11.9	15	2					1	2			20	2	25	2			5	2			65	2
2 LARI LAR	27.3	0.5			1	2									2	2							3	2
3 PICE GLA	9.1	0.3													3	2								
4 BETU PAP	9.1	0.1													1	2								
A2 LAYER																								
PICE MAR	81.8	6.9	5	2	5	2	10	2	1	2			10	2	10	2			15	2	10	2	10	2
LARI LAR	9.1	0.5																			5	2		
PICE GLA	9.1	0.1													1	2								
E LAYER																								
5 EVER MES	81.8	4.5	5	2	5	2	5	2	1	2			3	2	10	2			10	2	5	2	5	2
6 CETR PIN	81.8	3.9	5	2	5	2	10	2	1	2			1	2	5	2	1	2	10	2			5	2
7 HYPO PHY	63.6	3.4	5	2	5	2	5	2					2	2			5	2	10	2			5	2
8 CETR HAL	63.6	2.9			5	2	5	2	1	2					5	2	1	2	10	2	5	2		
9 USNE SOR	63.6	2.8	5	2			5	2	1	2					5	2	5	2	5	2	5	2		
10 PARM SUL	54.5	2.8	5	2			5	2	1	2					5	2			10	2	5	2		
11 BRYO FUS	54.5	2.4			5	2	1	2							5	2	5	2	5	2	5	2		
12 USNE SCA	18.2	1.4					5	2							10	2								
13 USNE CAV	18.2	0.9			5	2													5	2				
14 BRYO FRE	9.1	0.5																			5	2		
15 PTIL PUL	9.1	0.5																					5	2
16 USNE ALP	9.1	0.5																			5	2		
17 USNE GLA	9.1	0.5													5	2								
B1 LAYER																								
PICE MAR	63.6	5.0	10	2	1	2			1	2	2	2			1	2	15	2	25	2				
18 SALI BEB	18.2	0.4									1	2									3	2		
BETU PAP	9.1	0.1													1	2								
PICE GLA	9.1	0.1													1	2								
B2 LAYER																								
19 LEDU GRO	81.8	30.7	60	2	50	2	70	2	35	2	25	2	70	2	5	2	20	2	3	2				
PICE MAR	72.7	4.1	5	2	5	2	1	2	2	2	10	2					10	2	10	2	2	2		
20 SALI MYR	27.3	3.3									1	2					25	2			10	2		
21 BETU GLA	27.3	0.6							1	2							1	2			5	2		
22 SALI PLA	18.2	1.9															1	2			20	2		
23 BETU PUM	18.2	0.3			2	2					1	2												
LARI LAR	18.2	0.3											1	2							2	2		
24 SALI GLA	18.2	0.2									1	2					1	2						
25 ROSA ACI	9.1	0.3													3	2								
26 LEDU PAL	9.1	0.2																			2	2		
27 ALNU CRI	9.1	0.1																			1	2		
28 BETU NEO	9.1	0.1							1	2														
BETU PAP	9.1	0.1													1	2								
29 CHAM CAL	9.1	0.1							1	2														
C LAYER																								
30 VACC VIT	81.8	3.7	3	2	1	2	1	2	4	2	15	2	10	2	5	2			1	2			1	2
31 RUBU CHA	54.5	2.2			2	1	5	2	5	2	1	2	10	2					1	2				
32 SMIL TRI	54.5	1.1	1	2			3	2	4	2	1	2	1	2							2	2		
33 OXYC MIC	45.5	0.6			1	2	1	2	3	2			1	2							1	2		

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Sb		

PICEA MARIANA/LEDUM GROENLANDICUM/MOSS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 15 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R085		4K R043		4K R021		4K R110		4K R005		4K R003		4K R105		4K R087		4K R129		4K R090		4K R095	
NUMBER OF SPECIES PER PLOT	28.6		28		22		28		28		32		23		37		31		29		41		16	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
34 EQUI ARV	36.4	3.9									1	2			40	2	1	2					1	2
35 ORTH SEC	27.3	0.3															1	2			1	2	1	2
36 PEDI LAB	27.3	0.3									1	2					1	2			1	2		
37 EQUI SYL	18.2	1.5	15	2									2	2										
38 CORN CAN	18.2	0.4													3	2							1	2
39 EQUI SCI	9.1	0.2															2	2						
40 LINN BOR	9.1	0.2													2	2								
41 MAIA CAN	9.1	0.2																			2	2		
42 ACHI MIL	9.1	0.1															1	2						
43 DROS ROT	9.1	0.1					1	2																
44 EMPE NIG	9.1	0.1	1	2																				
45 EPIL ANG	9.1	0.1									1	2												
46 GEOC LIV	9.1	0.1													1	2								
47 MITE NUD	9.1	0.1													1	2								
48 PARN FIM	9.1	0.1																			1	2		
49 PETA PAL	9.1	0.1															1	2						
50 POLE PUL	9.1	0.1																			1	2		
51 PYRO ASA	9.1	0.1																			1	2		
52 PYRO CHL	9.1	0.1													1	2								
53 RANU LAP	9.1	0.1																			1	2		
54 RUBU PUB	9.1	0.1																			1	2		
55 SPIR ROM	9.1	0.1															1	2						
56 STEL LON	9.1	0.1																			1	2		
58 VIOL REN	9.1	0.1																			1	2		
G LAYER																								
59 CARE AQU	45.5	2.3	1	2			1	2			1	2					2	2			20	2		
60 ERIO VAG	18.2	0.7					1	2	7	2														
61 CALA CAN	18.2	0.5													1	2					5	2		
62 CARE LIM	9.1	0.5																			5	2		
63 CARE DIS	9.1	0.2																			2	2		
64 AGRO SCA	9.1	0.1									1	2												
65 CARE CON	9.1	0.1													1	2								
66 CARE DIA	9.1	0.1																			1	2		
67 CARE GYN	9.1	0.1															1	2						
68 FEST RUB	9.1	0.1									1	2												
69 POAS P	9.1	0.1															1	2						
D LAYER																								
70 PLEU SCH	54.5	19.7	1	2							1	2	15	2	75	2			75	2			50	2
71 SPHA FUS	54.5	9.6	5	2	10	2	10	2	77	2			1	2			3	2						
72 AULA PAL	54.5	1.5	1	2							1	2	1	2	5	2	4	2			5	2		
73 POLY STR	45.5	1.3	5	2	2	2	5	2	1	2									1	2				
74 DICR UND	45.5	0.6	2	2							1	2			2	2	1	2	1	2				
75 TOME NIT	36.4	9.3									1	2			1	2	90	2			10	2		
76 HYLO SPL	36.4	3.6											15	2	5	2			15	2			5	2
77 SPHA WAR	36.4	0.8													2	2	1	2	1	2	5	2		
78 MYLI ANO	36.4	0.4	1	2	1	2	1	2	1	2														
79 PTIL CRI	18.2	4.1																	5	2			40	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Sb		

PICEA MARIANA/LEDUM GROENLANDICUM/MOSS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 15 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K R085		4K R043		4K R021		4K R110		4K R005		4K R003		4K R105		4K R087		4K R129		4K R090		4K R095	
NUMBER OF SPECIES PER PLOT	28.6		28		22		28		28		32		23		37		31		29		41		16	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
80 POHL NUT	18.2	0.2							1	2	1	2												
81 SPHA TER	9.1	3.2																			35	2		
82 PLAG ELL	9.1	0.5																			5	2		
83 SPHA ANG	9.1	0.5					5	2																
84 BRAC TUR	9.1	0.2																			2	2		
85 HELO BLA	9.1	0.2																			2	2		
86 DICR POL	9.1	0.1											1	2										
87 DREP FLU	9.1	0.1							1	2														
88 EURH PUL	9.1	0.1																					1	2
89 POLY PIL	9.1	0.1									1	2												
90 SPHA NEM	9.1	0.1																	1	2				
L LAYER																								
91 CLAD MIT	72.7	10.6	50	2	5	2	1	2	15	2	4	2	40	2	1	2	1	2						
92 CLAD RAN	45.5	1.2	5	2			1	2					5	2	1	2			1	2				
93 CLAD COR	45.5	0.9			5	2	1	2	2	2	1	2							1	2				
94 PELT CAN	45.5	0.5	1	2					1	2			1	2			1	2					1	2
95 CETR NIV	36.4	0.4	1	2			1	2			1	2							1	2				
96 CLAD STE	36.4	0.4	1	2			1	2					1	2					1	2				
97 CLAD GRA	27.3	0.6			2	2			1	2	4	2												
98 PELT APH	27.3	0.4									2	2	1	2			1	2						
99 CLAD DEF	27.3	0.3					1	2	1	2	1	2												
100 CLAD COC	18.2	0.2	1	2							1	2												
101 ICMA ERI	18.2	0.2									1	2	1	2										
102 PELT POL	18.2	0.2									1	2							1	2				
103 CLAD ARB	9.1	0.1															1	2						
104 CLAD FUR	9.1	0.1									1	2												
105 CLAD SUL	9.1	0.1			1	2																		
106 CLAD UNC	9.1	0.1	1	2																				
107 PELT MAL	9.1	0.1																	1	2				

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW WL		

WILLOW SHRUBLANDS - DEPRESSIONS AND LEVEL AREAS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 16 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R006		4K R044		4K R106		4K R067		4K R117		4K R099		4K R014		4K R049	
NUMBER OF SPECIES PER PLOT	30.5		30		32		29		40		27		29		24		33	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
A1 LAYER																		
1 PICE MAR	12.5	0.1									1	2						
A2 LAYER																		
2 SALI BEB	25.0	16.3											70	2	60	2		
3 SALI DIS	25.0	2.5											10	2	10	2		
4 SALI PSE	12.5	5.0															40	2
5 SALI ARB	12.5	4.4															35	2
6 ALNU TEN	12.5	0.6															5	2
E LAYER																		
7 PARM SUL	62.5	2.6			5	2			5	2			5	2	1	2	5	2
8 CETR HAL	50.0	2.0					5	2	5	2			5	2	1	2		
9 EVER MES	50.0	2.0			5	2			5	2			5	2	1	2		
10 USNE SOR	37.5	1.4					5	2	5	2					1	2		
11 CETR PIN	25.0	1.3					5	2					5	2				
12 HYPO PHY	12.5	0.6					5	2										
13 PYLA POL	12.5	0.6											5	2				
B1 LAYER																		
14 SALI MYR	25.0	6.3			25	2			25	2								
15 SALI MAC	12.5	1.9			15	2												
16 SALI PLA	12.5	1.3			10	2												
ALNU TEN	12.5	0.6													5	2		
SALI ARB	12.5	0.1															1	2
SALI PSE	12.5	0.1															1	2
B2 LAYER																		
17 BETU PUM	50.0	8.4	1	2	10	2			1	2	55	2						
18 LEDU GRO	50.0	3.9	5	2	2	2	4	2			20	2						
PICE MAR	50.0	1.6	1	2			1	2	10	2					1	2		
SALI PLA	37.5	15.0	60	2					50	2	10	2						
19 BETU GLA	37.5	6.3			5	2	30	2	15	2								
20 CORN STO	37.5	2.1											15	2	1	2	1	2
21 RIBE OXY	37.5	0.6			1	2							3	2	1	2		
SALI BEB	25.0	1.3							5	2			5	2				
SALI MYR	25.0	0.4	2	2							1	2						
22 BETU PAP	25.0	0.3	1	2									1	2				
23 LONI INV	25.0	0.3											1	2	1	2		
24 PICE GLA	25.0	0.3			1	2					1	2						
25 SALI SP	12.5	4.4					35	2										
26 SALI ATH	12.5	2.5	20	2														
SALI ARB	12.5	1.3	10	2														
27 SALI GLA	12.5	1.3							10	2								
28 RUBU IDA	12.5	0.6											5	2				
29 LARI LAR	12.5	0.1					1	2										
30 LONI DIO	12.5	0.1			1	2												
31 RIBE TRI	12.5	0.1													1	2		
32 ROSA ACI	12.5	0.1	1	2														
33 SHEP CAN	12.5	0.1															1	2
C LAYER																		
34 EQUI ARV	62.5	3.5	1	2	1	2							10	2	15	2	1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW WL		

WILLOW SHRUBLANDS - DEPRESSIONS AND LEVEL AREAS

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V) TABLE 16 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R006		4K R044		4K R106		4K R067		4K R117		4K R099		4K R014		4K R049	
NUMBER OF SPECIES PER PLOT	30.5		30		32		29		40		27		29		24		33	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
35 RUBU PUB	62.5	1.0			1	2	2	2	1	2			3	2			1	2
36 FRAG VIR	50.0	1.6	2	2					5	2			5	2			1	2
37 EPIL ANG	50.0	0.8	2	2							1	2	2	2			1	2
38 TRIE BOR	50.0	0.6	2	2			1	2			1	2	1	2				
39 ACHI MIL	50.0	0.5	1	2					1	2	1	2					1	2
40 MERT PAN	37.5	1.6							1	2			10	2	2	2		
41 RUBU ARC	37.5	1.1	2	2							2	2			5	2		
42 ASTE CIL	37.5	0.5							1	2			2	2			1	2
43 MITE NUD	37.5	0.4			1	2			1	2					1	2		
44 VICI AME	37.5	0.4							1	2			1	2			1	2
45 POLE PUL	25.0	0.8	1	2					5	2								
46 ASTR AME	25.0	0.5							3	2							1	2
47 VACC VIT	25.0	0.5	2	2							2	2						
48 GALI TRI	25.0	0.4											2	2	1	2		
49 LINN BOR	25.0	0.4	2	2			1	2										
50 CAST RAU	25.0	0.3			1	2											1	2
51 EQUI PRA	25.0	0.3			1	2			1	2								
52 GALI BOR	25.0	0.3											1	2	1	2		
53 MOEH LAT	25.0	0.3			1	2			1	2								
54 OXYC MIC	25.0	0.3	1	2							1	2						
55 PARN PAL	25.0	0.3					1	2									1	2
56 PETA SAG	25.0	0.3			1	2									1	2		
57 PYRO ASA	25.0	0.3											1	2			1	2
58 SENE PAP	25.0	0.3			1	2			1	2								
59 SPIR ROM	25.0	0.3							1	2	1	2						
60 THAL VEN	12.5	0.4											3	2				
61 ASTE BOR	12.5	0.1					1	2										
62 CERA SP	12.5	0.1									1	2						
63 CORA TRI	12.5	0.1	1	2														
64 EPIL PAL	12.5	0.1					1	2										
65 EQUI SCI	12.5	0.1															1	2
66 GALI TRF	12.5	0.1			1	2												
67 GENT AMA	12.5	0.1							1	2								
68 HEDY BOR	12.5	0.1							1	2								
69 PARN FIM	12.5	0.1									1	2						
70 PETA PAL	12.5	0.1					1	2										
71 PETA VIT	12.5	0.1							1	2								
72 POTE NOR	12.5	0.1													1	2		
73 POTE PAL	12.5	0.1					1	2										
74 PYRO CHL	12.5	0.1					1	2										
75 RUBU CHA	12.5	0.1									1	2						
76 SMIL STE	12.5	0.1			1	2												
77 SMIL TRI	12.5	0.1									1	2						
78 SOLI GIG	12.5	0.1							1	2								
79 STEL LON	12.5	0.1					1	2										
80 TARA OFF	12.5	0.1							1	2								
81 VALE DIO	12.5	0.1							1	2								
82 VIOL ADU	12.5	0.1			1	2												

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW WL		

WILLOW SHRUBLANDS DEPRESSIONS AND LEVEL AREAS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 16 PAGE 3

PLOT NUMBER	AVERAGE VALUE		4K R006		4K R044		4K R105		4K R067		4K R117		4K R099		4K R014		4K R049	
NUMBER OF SPECIES PER PLOT	30.5		30		32		29		40		27		29		24		33	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV	%C	SV
83 VIOL SPP	12.5	0.1	1	2														
G LAYER																		
84 CALA CAN	62.5	9.5			3	2	5	2					7	2	60	2	1	2
85 CARE AQU	50.0	11.0	50	2	20	2	15	2			3	2						
86 AGRO TRA	25.0	0.5							3	2			1	2				
87 BROM CIL	25.0	0.5							3	2			1	2				
88 CARE CAP	25.0	0.5							2	2							2	2
89 CARE AUR	25.0	0.3							1	2							1	2
90 CALA STR	12.5	1.9									15	2						
91 CARE NOR	12.5	0.3															2	2
92 JUNC BAL	12.5	0.3							2	2								
D LAYER																		
93 AULA PAL	75.0	2.9	10	2	2	2	5	2	3	2	2	2					1	2
94 TOME NIT	50.0	8.4	5	2	1	2					60	2					1	2
95 SPHA WAR	50.0	5.4	2	2	30	2	1	2			10	2						
96 BRAC SAL	37.5	0.4											1	2	1	2	1	2
97 PLAG ELL	25.0	0.8			5	2	1	2										
98 BRYU PSE	25.0	0.4	2	2													1	2
99 DICR UND	25.0	0.4			1	2					2	2						
100 HYLO SPL	25.0	0.3	1	2	1	2												
101 DREP ADU	12.5	0.4					3	2										
102 EURH PUL	12.5	0.3															2	2
103 AMBL SER	12.5	0.1															1	2
104 CAMP HIS	12.5	0.1															1	2
105 CAMP STE	12.5	0.1							1	2								
106 DREP UNC	12.5	0.1									1	2						
107 DREP VER	12.5	0.1															1	2
108 HYPN PRA	12.5	0.1					1	2										
109 PELT APH	12.5	0.1					1	2										
110 PELT CAN	12.5	0.1					1	2										
111 PELT POL	12.5	0.1					1	2										
112 PLAG CUS	12.5	0.1													1	2		
113 POHL NUT	12.5	0.1			1	2												
114 POLY STR	12.5	0.1									1	2						
PYLA POL	12.5	0.1													1	2		
115 SCOR SCO	12.5	0.1	1	2														
116 SPHA ANG	12.5	0.1									1	2						
117 THUI REC	12.5	0.1	1	2														
L LAYER																		
PELT CAN	50.0	0.5	1	2	1	2			1	2							1	2
118 CLAD MIT	25.0	0.3							1	2	1	2						
PELT APH	12.5	0.1							1	2								

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Ws		

WILLOW- SEEPAGE AREAS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 17 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K RO34		4K RO50		4K RO77	
NUMBER OF SPECIES PER PLOT	31.3		36		22		36	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
A1 LAYER								
1 POPU BAL	33.3	3.3					10	2
A2 LAYER								
2 SALI BEB	66.7	31.7	30	2	65	2		
3 SALI DIS	33.3	5.0	15	2				
4 ALNU TEN	33.3	3.3	10	2				
E LAYER								
5 PARM SUL	100.0	6.7	5	2	10	2	5	2
6 CETR HAL	100.0	5.0	5	2	5	2	5	2
7 PYLA POL	100.0	5.0	5	2	5	2	5	2
8 EVER MES	66.7	3.3			5	2	5	2
9 USNE SOR	66.7	3.3	5	2	5	2		
10 CETR PIN	33.3	1.7					5	2
B1 LAYER								
11 SALI ARB	33.3	26.7					80	2
SALI BEB	33.3	3.3			10	2		
B2 LAYER								
12 CORN STO	100.0	29.0	25	2	60	2	2	2
13 RIBE OXY	100.0	4.0	10	2	1	2	1	2
14 VIBU EDU	66.7	8.3	10	2	15	2		
15 ROSA ACI	66.7	2.0	5	2	1	2		
16 RUBU IDA	66.7	2.0	5	2	1	2		
17 RIBE TRI	33.3	1.7					5	2
18 PICE GLA	33.3	0.3					1	2
POPU BAL	33.3	0.3					1	2
SALI BEB	33.3	0.3			1	2		
C LAYER								
19 MERT PAN	100.0	2.7	1	2	2	2	5	2
20 ACTA RUB	100.0	1.0	1	2	1	2	1	2
21 GALI TRI	100.0	1.0	1	2	1	2	1	2
22 DELP GLA	66.7	11.7	10	2	25	2		
23 EPIL ANG	66.7	5.3	15	2	1	2		
24 EQUI ARV	66.7	3.3			7	3	3	2
25 ASTE CIL	66.7	2.0	1	2			5	2
26 RUBU PUB	66.7	2.0	1	2			5	2
27 MITE NUD	66.7	1.3	1	2			3	2
28 FRAG VIR	66.7	0.7	1	2			1	2
29 VIOL REN	66.7	0.7	1	2			1	2
30 HERA LAN	33.3	1.7	5	2				
31 LINN BOR	33.3	1.7					5	2
32 DRYO ASS	33.3	1.0	3	2				
33 ARAL NUD	33.3	0.7	2	2				
34 CORN CAN	33.3	0.7					2	2
35 ASTE PUN	33.3	0.3					1	2
36 CIRC ALP	33.3	0.3	1	2				
37 EQUI PRA	33.3	0.3	1	2				
38 EQUI SYL	33.3	0.3	1	2				
39 GALI BOR	33.3	0.3	1	2				

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW Ws		

WILLOW- SEEPAGE AREAS

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 17 PAGE 2

PLOT NUMBER	AVERAGE VALUE		4K R034		4K R050		4K R077	
NUMBER OF SPECIES PER PLOT	31.3		36		22		36	
SPECIES	%P	MC	%C	SV	%C	SV	%C	SV
40 GEUM ALE	33.3	0.3	1	2				
41 MOEH LAT	33.3	0.3			1	2		
42 PETA PAL	33.3	0.3					1	2
43 PYRO ASA	33.3	0.3					1	2
44 SYMP ALB	33.3	0.3	1	2				
45 TARA OFF	33.3	0.3					1	2
46 THAL VEN	33.3	0.3			1	2		
47 URTI DIO	33.3	0.3	1	2				
G LAYER								
48 CALA CAN	100.0	5.0	5	2	5	2	5	2
49 CALA STR	33.3	1.7					5	2
50 CARE DIS	33.3	1.0					3	2
51 CARE NOR	33.3	0.7					2	2
52 AGRO STO	33.3	0.3					1	2
D LAYER								
53 BRAC SAL	33.3	0.3	1	2				
54 DICR UND	33.3	0.3					1	2
55 EURH PUL	33.3	0.3	1	2				
56 HYLO SPL	33.3	0.3					1	2
57 PLAG MED	33.3	0.3	1	2				
58 PLEU SCH	33.3	0.3					1	2
L LAYER								
59 PELT APH	33.3	0.3					1	2

LEVEL	ZONE	ASSC	TYPE
ECOSYM UNIT	MW C		

SEDGE FEN

PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)

RESOURCE INVENTORY
EDMONTON, ALBERTA
22:51:47 APR 24, 1985
TABLE 18 PAGE 1

PLOT NUMBER	AVERAGE VALUE		4K R098		4K R111	
NUMBER OF SPECIES PER PLOT	14.0		14		14	
SPECIES	%P	MC	%C	SV	%C	SV
B2 LAYER						
1 SALI PLA	100.0	3.0	5	2	1	2
2 ALNU TEN	50.0	0.5			1	2
3 BETU GLA	50.0	0.5	1	2		
C LAYER						
4 POTE PAL	100.0	2.0	2	2	2	2
5 GALI TRF	100.0	1.0	1	2	1	2
6 LEMN MIN	50.0	1.5			3	2
7 CICU MAC	50.0	0.5			1	2
8 EPIL ANG	50.0	0.5			1	2
9 EPIL CIL	50.0	0.5	1	2		
10 RANU GME	50.0	0.5	1	2		
11 RORI PAL	50.0	0.5	1	2		
12 RUME RRI	50.0	0.5			1	2
13 SCUT GAL	50.0	0.5			1	2
G LAYER						
14 CARE AQU	100.0	44.0	50	2	38	2
15 CALA CAN	100.0	11.0	20	2	2	2
16 CARE ROS	50.0	25.0			50	2
17 AGRO SCA	50.0	0.5	1	2		
D LAYER						
18 SCOR TUR	50.0	15.0	30	2		
19 BRYU PSE	50.0	0.5	1	2		
20 DREP ADU	50.0	0.5			1	2
21 MARC POL	50.0	0.5	1	2		
22 PLAG ELL	50.0	0.5			1	2
23 RHIZ PSE	50.0	0.5	1	2		

```
|  LEVEL    |  ZONE   |ASSC|TYPE|                                                                             RESOURCE INVENTORY
|---------------------------------|          GRASSLAND - STEEP SOUTHFACING SLOPES                               EDMONTON, ALBERTA
|ECOSYM UNIT|MW     G |    |    |                                                                   22:51:47     APR 24, 1985
|           |         |    |    |   PRESENCE (%P), MEAN COVER (MC), PERCENT COVER (%C), SOCIABILITY (S), VIGOR (V)   TABLE 19  PAGE  1
-------------------------------------------------------------------------------------------------------------------------------
                                 |  AVERAGE  |   4K|
PLOT NUMBER                      |   VALUE   | 8075|
---------------------------------|-----------|-----|
NUMBER OF SPECIES PER PLOT       |    23.0   |  23 |
---------------------------------|-----------|-----|
SPECIES                          |   %P   MC |%C SV|

        B2 LAYER                 |-----------|-----|
   1 ARTE FRI                    |100.0 10.0 |10  3|
   2 ROSA WOO                    |100.0  5.0 | 5  2|
   3 SYMP OCC                    |100.0  3.0 | 3  2|
   4 AMEL ALN                    |100.0  1.0 | 1  2|
         C  LAYER                |-----------|-----|
   5 SOLI MIS                    |100.0  3.0 | 3  2|
   6 ANDR SEP                    |100.0  1.0 | 1  2|
   7 ASTE LAE                    |100.0  1.0 | 1  2|
   8 ASTR DAS                    |100.0  1.0 | 1  2|
   9 COMA UMB                    |100.0  1.0 | 1  2|
  10 GEUM TRI                    |100.0  1.0 | 1  2|
  11 MELI ALB                    |100.0  1.0 | 1  2|
  12 OXYT SPL                    |100.0  1.0 | 1  2|
  13 POTE PEN                    |100.0  1.0 | 1  2|
  14 STAC PAL                    |100.0  1.0 | 1  2|
  15 TARA OFF                    |100.0  1.0 | 1  2|
  16 TRAG DUB                    |100.0  1.0 | 1  2|
  17 VICI AME                    |100.0  1.0 | 1  2|
         G  LAYER                |-----------|-----|
  18 CARE PEN                    |100.0 30.0 |30  2|
  19 AGRO TRA                    |100.0 20.0 |20  2|
  20 STIP VIR                    |100.0 15.0 |15  2|
  21 STIP CUR                    |100.0  5.0 | 5  2|

  22 KOEL MAC                    |100.0  3.0 | 3  2|
         L  LAYER                |-----------|-----|
  23 CLAD PYX                    |100.0  2.0 | 2  2|
                                 -------------------
```

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

SPECIES — PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE

ECOSYSTEMATIC UNITS	MW	A1	MW	A2	MW	A3.0	MW	A3.1	MW	A4	MW	A5	MW	A6	Bw		MW	PB1	MW	SwA	MW	Sw
ABIE BAL																					II	3.2
ACHI MIL	IV	0.7	II	0.3	III	0.6	II	0.3	III	0.7	I	0.2	IV	0.7			II	0.3	I	0.2		
ACHI SIB					I	0.1																
ACTA RUB	I	0.1	II	0.3	I	0.1					II	0.5	III	0.5			I	0.2	I	0.7	I	0.1
AGOS GLA																			I	0.1		
AGRO SCA	I	0.1																				
AGRO SP									I	0.1	I	0.1										
AGRO STO																						
AGRO TRA	I	0.5							II	0.2			II	0.3			II	0.3	I	0.1		
ALNU CRI	I	0.0					I	0.4			V	13.8	II	3.3	V	2.0			I	0.2	I	0.3
ALNU TEN													I	0.3			III	14.2				
AMBL SER																			I	0.1		
AMEL ALN	II	0.4	II	0.7	II	0.8	III	0.6	II	0.4			I	1.7			II	0.3			I	0.1
ANDR SEP																						
ANTE APR	I	0.0																				
ARAL NUD	II	1.3	II	1.7	I	2.5	III	3.0	I	0.6	II	3.3	II	10.8			II	8.3	I	0.7	II	0.2
ARCT UVA	II	1.0			I	0.2					I	0.3									I	0.1
ARNI COR																						
ARTE FRI																						
ASTE BOR																						
ASTE CIL	III	0.8	II	0.3	IV	1.1	III	0.6	IV	1.1	I	0.3	V	1.2			IV	0.7	II	0.3	I	0.1
ASTE CON	II	1.0	II	1.7	II	1.2	IV	3.3			I	0.5	II	0.7					I	0.5		
ASTE LAE																						
ASTE PUN																						
ASTR AME	II	0.4			I	0.1	I	0.3			I	0.3							I	0.1	I	0.1
ASTR DAS																						
ASTR EUC	I	0.0																				
ASTR VEX	I	0.1																				
AULA PAL	II	0.3	II	0.3	II	0.3	II	0.3	II	0.2	I	0.2	I	0.2	V	1.0	I	0.2	II	0.3	II	0.3
BETU GLA					I	0.5																
BETU NEO							I	0.1														
BETU OCC							I	0.1														
BETU PAP	I	0.1					II	0.6	I	0.1					V	75.0	I	0.2	I	0.1	II	1.5
BETU PUM																						
BOTR LUN									I	0.1												
BRAC CAM	I	0.2	II	1.7	III	0.1	II	0.3	II	0.2	I	0.9	I	0.2	V	1.0	I	0.2	I	0.4		
BRAC SAL	III	0.5	II	3.3	II	0.3	III	0.4	II	0.3	II	0.3	I	0.2					III	0.5	II	0.2
BRAC STA															V	1.0			I	0.2		
BRAC TUR																						
BROM CIL	I	0.2							I	0.1			I	1.7								
BRYO FRE																						
BRYO FUS																			I	0.5	I	0.1
BRYU PSE																						
CALA CAN	II	1.6	IV	3.7	II	3.6	III	1.0	III	0.4	II	1.2	III	1.2	V	5.0	II	0.5	II	0.3	II	0.3
CALA INE							I	0.1	II	0.2	I	0.9							I	0.2	I	0.1
CALA STR	I	0.1					II	0.4	II	0.2	II	1.0							I	0.1	I	0.4
CALO SPP					I	0.1																
CALT PAL																					I	0.1
CAMP HIS																						

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA

ECOSYSTEMATIC UNITS	MW A1	MW A2	MW A3.0	MW A3.1	MW A4	MW A5	MW A6	Bw	MW PB1	MW SwA	MW Sw
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE										
CAMP POL					I 0.1						
CAMP STE											
CARE AQU											
CARE AUR						I 0.1					
CARE CAP											
CARE CON											
CARE DIA											
CARE DIS											I 0.1
CARE GYN											
CARE LIM											
CARE NOR											
CARE PEN											
CARE ROS											
CAST RAU											
CERA PUR			I 0.1								
CERA SP											
CETR HAL	I 0.2			III 1.0		III 1.3	I 0.2	V 5.0	II 1.7	IV 2.1	III 2.2
CETR NIV											
CETR PIN	I 0.4		I 0.1			I 0.2		V 5.0	I 0.8	II 1.1	III 0.7
CHAM CAL											
CICU MAC											
CIRC ALP											I 0.2
CLAD ARB	I 0.0										
CLAD CEN										I 0.1	
CLAD CHL											
CLAD COC											
CLAD COR	I 0.2				I 0.6	I 0.2					I 0.1
CLAD CRI	I 0.1								I 0.2		
CLAD DEF						I 0.1					
CLAD ECM						I 0.1					
CLAD FUR			I 0.1								
CLAD SUL											
CLAD GRA	II 0.3		I 0.2			I 0.2				I 0.1	I 0.1
CLAD MIT	II 0.3					I 0.1				I 0.1	
CLAD MUL	I 0.1							V 1.0			
CLAD PYX											
CLAD RAN											I 0.1
CLAD STE											
CLAD UNC											
COMA UMB											
CORA TRI			I 0.1			I 0.2					
CORN CAN	V 5.1		V 3.9	V 8.9	III 1.3	V 6.1	III 0.5	V 1.0		V 7.5	V 3.4
CORN STO	I 0.0	IV 2.0	II 0.6		V 15.7		V 10.0		V 16.5	I 0.9	II 0.2
DELP GLA		IV 1.3			I 0.6		II 1.7		I 0.2		I 0.1
DICR ACU	I 0.0					I 0.1					
DICR FRA											II 0.3
DICR FUS						I 0.1					I 0.1
DICR POL			I 0.1			I 0.1					

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA
PAGE 3

ECOSYSTEMATIC UNITS	MW A1	MW A2	MW A3.0	MW A3.1	MW A4	MW A5	MW A6	Rw	MW PB1	MW SwA	MW Sw
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE										
DICR SCO			I 0.1	I 0.1							
DICR UND	I 0.1		I 0.1		I 0.1	I 0.2					I 0.1
DREP ADU											
DREP FLU											
DREP UNC	III 0.5		I 0.2	III 0.4	I 0.1	I 0.2	I 0.2			I 0.3	
DREP VER											
DROS ROT											
DRYO ASS											
DRYO CAR											I 0.1
ELAE COM									I 1.7		
ELYM INN	IV 15.0	II 0.3	V 18.7	II 2.9	II 1.7	III 7.6	I 0.3			III 3.4	I 0.4
EMPE NIG											
EPIL ANG	V 4.5	IV 1.3	V 3.3	V 10.3	IV 2.3	IV 2.6	IV 1.5	V 1.0	IV 13.0	IV 1.2	II 0.4
EPIL CIL											
EPIL PAL											
EQUI ARV	I 0.1				V 10.1	I 0.4	V 0.8	V 35.0	III 0.8	II 7.0	III 7.6
EQUI PRA	I 0.0	IV 15.0			II 0.3				I 1.7	I 0.2	I 5.4
EQUI SCI											
EQUI SYL	II 0.3		I 0.1	III 0.4	I 0.1	III 0.5	II 0.3		I 0.3	II 0.4	II 0.4
ERIO VAG											
EURH PUL	I 0.2		I 0.2	II 0.3	III 0.4	I 0.1	II 0.3			IV 0.7	II 0.3
EVER MES	I 0.7		I 0.1	II 0.9		II 1.0	II 1.0	V 5.0	II 1.7	IV 2.9	IV 3.1
FEST RUB											
FRAG VIR	III 1.4	II 0.3	IV 1.7	IV 0.9	V 1.2	III 0.8	V 3.7		III 0.5	IV 0.7	I 0.1
GALI BOR	IV 1.0	V 1.0	V 1.0	V 1.1	IV 0.5	I 0.1	III 0.5		III 0.5	III 0.5	II 0.4
GALI TRF											
GALI TRI					III 0.6	III 0.5	II 0.3		II 0.3		I 0.1
GENT AMA	I 0.1			I 0.1		I 0.1	I 0.2				
GEOC LIV			I 0.1			I 0.1				I 0.1	I 0.1
GEUM ALE											
GEUM TRI											
GOOD REP											I 0.1
GYMN DRY				I 0.1							I 0.1
HAPL MIC		II 0.3									
HEDY BOR											
HELO BLA											
HERA LAN							I 0.2				
HIER UMB	I 0.2		I 0.1			I 0.1			I 0.2		
HYLO SPL	V 2.5	II 0.3	V 3.1	IV 1.4	IV 0.7	IV 1.1	III 0.5		I 0.2	V 35.6	V 47.3
HYPN PRA											
HYPO PHY	I 0.9		I 0.5	I 0.7				V 5.0	I 0.8	IV 3.2	IV 2.4
ICMA ERI						I 0.1					
JUNC BAL											
KOEL MAC											

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA
PAGE 4

PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE

ECOSYSTEMATIC UNITS / SPECIES	MW A1	MW A2	MW A3.0	MW A3.1	MW A4	MW A5	MW A6	Bw	MW PB1	MW SwA	MW Sw
LARI LAR											I 0.1
LATH OCH	V 2.0	IV 0.7	IV 1.7	V 3.1	IV 0.9	III 0.5	V 1.5		II 0.3	IV 0.6	I 0.1
LATH VEN			I 0.2							I 0.1	I 0.1
LEDU GRO	I 0.0		I 0.8	I 0.1		I 0.2				I 0.1	I 0.3
LEDU PAL											
LEMN MIN											
LEPT PYR	I 0.0										
LINN BOR	V 2.3		IV 1.5	V 3.3	II 0.4	V 7.1	II 0.7	V 1.0		V 2.5	V 1.9
LONI DIO		IV 1.3	I 0.1	II 0.3	II 0.3	I 0.2	II 0.3		I 0.2	I 0.1	I 0.1
LONI INV		II 0.3			II 3.7		II 2.0		I 0.2	II 0.3	II 0.2
LYCO ANN											I 0.1
LYCO COM			I 0.4								
MAIA CAN	II 0.5		III 0.6	IV 0.7	I 0.1	III 0.7	II 0.3		I 0.5	II 0.3	II 0.4
MARC POL											
MELI ALB											
MERT PAN	III 0.8	V 10.0	IV 0.8	IV 1.6	V 4.4	V 4.5	V 5.0	V 1.0	IV 2.5	III 1.5	III 0.9
MITE NUD		II 0.3		III 0.4	III 0.7	III 0.5	V 0.8	V 1.0	II 0.3	III 1.3	III 0.8
MNIU SPI										I 0.1	I 0.1
MOEH LAT					II 0.2	I 0.1	II 0.3		II 0.3		I 0.1
MONE UNI										I 0.1	I 0.1
MYLI ANO											
ONCO WAH		II 0.3									
ORTH OBT				I 0.7							
ORTH OBT										I 0.5	
ORTH SEC	II 0.4		II 0.3	II 0.3	I 0.1	V 1.0	II 0.3			III 0.5	II 0.3
ORTH SPE										I 0.1	
OSMO DEP					I 0.1						
OXYC MIC											
OXYT DEF	I 0.0										
OXYT SPL											
PARM SEP						I 0.1					
PARM SUL	II 1.1		II 0.9	II 0.3	II 0.7	IV 1.0	II 1.0		II 1.7	V 3.5	V 3.9
PARN FIM											
PARN PAL											
PEDI LAB			I 0.2								
PELT APH	II 0.4		II 0.3	I 0.1	II 0.3	I 0.2				II 0.4	II 0.2
PELT CAN	III 0.4		II 0.3	I 0.1	I 0.6	II 0.4	II 0.3			III 0.5	II 0.2
PELT MAL	I 0.1		I 0.1			I 0.1					
PELT POL	I 0.1		I 0.2			I 0.1				I 0.2	I 0.1
PELT SP	I 0.1			I 0.1							
PETA PAL	III 0.6	II 0.3	III 0.8	IV 0.9	III 0.7	V 1.9	V 2.0	V 1.0	IV 0.7	III 1.2	II 0.4
PETA SAG									I 0.2		
PETA VIT											
PHYS ADS						I 0.1					
PICE GLA	III 1.0		II 1.3	III 0.6	II 0.9	I 0.5	I 0.8		I 0.2	V 19.6	V 31.2
PICE MAR			I 1.7							I 0.5	
PINU CON											I 0.2
PLAG ASP											I 0.1

ECOSYSTEMATIC UNITS	MW A1	MW A2	MW A3 0	MW A3.1	MW A4	MW A5	MW A6	Bw	MW PB1	MW SwA	MW Sw
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE										
PLAG CUS		II 0.3	I 0.2		IV 0.7	I 0.2	I 0.2		II 0.3	I 0.2	II 0.4
PLAG DRU						I 0.2				I 0.1	I 0.1
PLAG ELL	I 0.1										I 0.1
PLAG MED											
PLEU SCH	II 0.3	II 0.3	III 0.4	III 1.7	I 0.1	III 0.6				V 8.1	V 16.7
POAP RA				I 0.1							
POAS P											
POHL NUT	I 0.1					I 0.1					
POLE PUL											
POLY COM	I 0.0			I 0.1							I 0.1
POLY JUN	I 0.0										I 0.1
POLY PIL											
POLY STR	I 0.2			I 0.1							I 0.1
POPU BAL	II 0.8		I 0.3	I 1.4	III 1.0	II 2.9	IV 12.5		V 37.5	II 0.5	I 0.1
POPU TRE	V 40.7	V 58.3	V 40 8	V 34.3	V 45.6	V 44.5	V 25.8		I 0.2	V 18.5	II 0.4
POTE NOR											
POTE PAL											
POTE PEN											
PRUN PEN				I 0.1	I 0.1						
PRUN VIR					I 0.1						
PTIL CIL											
PTIL CRI	I 0.2	II 0.3	I 0.2	II 0.3	I 0.1	III 0.5		V 1.0		I 0.2	V 14.3
PTIL PUL										II 1.4	II 1.1
PYLA POL	V 3.8	V 5.0	V 3.8	IV 3.6	IV 2.0	V 3.5	V 3.5	V 5.0	V 5.0	V 4.5	I 0.4
PYRO ASA	III 0.8	II 0.7	II 0.3	V 1.0	IV 0.9	V 6.2	V 1.3		I 0.2	II 0.5	II 0.2
PYRO CHL	I 0.0		I 0.1		I 0.1					I 0.1	II 0.2
PYRO ELL				I 0.1		I 0.2					
RANU GME											
RANU LAP											
RHIZ PSE											I 0.1
RIBE AME								V 1.0			
RIBE GLA							I 0.2				
RIBE LAC											I 0.1
RIBE OXY	II 0.3	V 1.3	I 0.1	III 0.4	V 1.9	I 0.3	III 0.7	V 1.0	IV 0.7	II 0.8	II 0.4
RIBE TRI		II 0.3	I 0.1		I 0.2	I 0.1	I 0.2		II 0.3	I 0.2	II 0.4
RORI PAL											
ROSA ACI	V 8.0	V 10.0	IV 6.9	V 10.1	V 24.8	IV 6.0	V 14.3	V 1.0	V 10.5	V 7.2	IV 3.1
ROSA WOO	I 0.5	IV 18.3	II 2.9			II 1.6	I 0.3			I 1.4	I 0.2
RUBU ARC											
RUBU CHA											
RUBU IDA		V 11.0	I 0.1		III 0.6	III 4.9	III 1.0	V 1.0	II 0.7	I 0.3	II 0.3
RUBU PUB	IV 1.7	IV 0.7	IV 1.2	V 2.9	V 2.4	V 6.3	IV 3.3	V 1.0	IV 1.2	IV 1.2	IV 1.6
RUME BRI											
SALI ARB											
SALI ATH											
SALI BER	III 2.1	II 0.7	II 1.6	III 0.4	III 1.7		II 0.3	V 2.0	I 2.5		I 0.1
SALI DIS									II 0.5		I 1.1
SALI DRU						I 0.1					
SALI GLA											

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA

ECOSYSTEMATIC UNITS	MW	A1	MW	A2	MW	A3.0	MW	A3.1	MW	A4	MW	A5	MW	A6	Bw	MW	PB1	MW	SwA	MW	Sw
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE																				
SALI MAC																					
SALI MYR											I	0.5	I	0.2							
SALI PLA																					
SALI PSE	I	0.0			I	0.2			II	0.4	I	0.2	I	0.5							
SALI PYR																		I	0.1		
SALI SCO	I	0.1			I	0.1	I	0.3			II	2.0									
SALI SP									I	0.3											
SCHI PUR					I	1.7															
SCOR SCO																					
SCOR TUR																					
SCUT GAL																					
SENE PAP	I	0.1	II	0.3	I	0.1					I	0.1	I	0.2							
SHEP CAN	V	35.5			IV	4.2	III	2.0			II	0.5	II	2.5		I	0.2	III	1.3	I	0.1
SMIL STE			II	0.3					I	0.1			I	0.2		I	0.2				
SMIL TRI											I	0.1								I	0.1
SOLI GIG																					
SOLI MIS																					
SOLI SPA	I	0.0																			
SORB SCO																				I	0.1
SPHA ANG																					
SPHA FUS																					
SPHA NEM																					
SPHA TER																					
SPHA WAR																					
SPHE INT	I	0.0																			
SPIR ROM																				I	0.1
STAC PAL																					
STEL LON																					
STER TOM	I	0.3																			
STIP CUR																					
STIP VIR																					
SYMP ALB	I	0.1	IV	2.0	III	0.6	II	0.3	III	0.4	I	0.2	II	0.3		II	0.3	I	0.2		
SYMP OCC	I	0.0																			
TARA OFF	I	0.1	II	0.3												I	0.2				
TETR MNI																					
THAL SPA													I	0.2							
THAL VEN	I	0.0	IV	0.7					I	0.1			I	0.2		I	0.2	I	0.1		
THUI REC	I	0.0							II	0.2	I	0.1						I	0.1		
TOME NIT																					
TRAG DUB																					
TRIE BOR					I	0.1	I	0.1	I	0.3										I	0.1
URTI DIO																					
USNE ALP	I	0.2																III	2.4	IV	4.4
USNE CAV																					
USNE GLA																					
USNE HIR																				I	0.8
USNE SCA																				I	0.4
USNE SOR					I	0.1	I	0.1			II	0.7						V	3.8	IV	3.1

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA
PAGE 7

ECOSYSTEMATIC UNITS	MW A1	MW A2	MW A3.0	MW A3.1	MW A4	MW A5	MW A6	Bw	MW PB1	MW SwA	MW Sw
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE										
USNE SP											I 0.1
VACC CAE			I 0.1								
VACC MYR			I 0.1	I 0.1							
VACC VIT			I 0.5		I 0.1					I 0.3	II 0.5
VALE DIO											
VIBU EDU	V 3.9	IV 5.3	IV 5.4	V 19.4	IV 11.6	V 15.8	V 9.3		V 9.5	V 4.5	V 2.5
VICI AME	III 0.8	IV 0.7	V 1.0	IV 1.4	IV 1.2	II 0.4	V 1.0		IV 0.7	I 0.1	
VIOL ADU	I 0.0				I 0.1						
VIOL CAN		II 0.3									
VIOL REN	I 0.1			III 0.4	IV 0.7	III 0.5	III 0.5		II 0.3	III 0.5	II 0.3
VIOL SPP											

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA
PAGE 8

ECOSYSTEMATIC UNITS	MW PL1	MW b PIS	MW PLA	MW Sb	MW Wl	MW Ws	MW C	MW G
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE							
ABIE BAL		I 2 0						
ACHI MIL			III 0 5	I 0.1	III 0.5			
ACHI SIB								
ACTA RUB						V 1.0		
AGOS GLA								
AGRO SCA				I 0.1			III 0.5	
AGRO SP								
AGRO STO						II 0.3		
AGRO TRA					II 0.5			V 20.0
ALNU CRI	V 25.0	II 2.0		I 0.1				
ALNU TEN					I 0.6	II 3.3	III 0.5	
AMBL SER					I 0.1			
AMEL ALN								V 1.0
ANDR SEP								V 1.0
ANTE APR								
ARAL NUD	II 1.7					II 0 7		
ARCT UVA								
ARNI COR			III 0.5					
ARTE FRI								V 10.0
ASTE BOR					I 0.1			
ASTE CIL			III 1 0		II 0.5	IV 2.0		
ASTE CON			III 0 5					
ASTE LAE								V 1.0
ASTE PUN						II 0.3		
ASTR AME					II 0.5			
ASTR DAS								V 1.0
ASTR EUC								
ASTR VEX								
AULA PAL		I 0.2	III 0 5	III 1.5	IV 2.9			
BETU GLA		I 0.2		II 0.6	II 6.3		III 0.5	
BETU NEO				I 0.1				
BETU OCC		I 0.2						
BETU PAP	II 0.3			I 0.1	II 0.3			
BETU PUM				I 0.3	III 8.4			
BOTR LUN								
BRAC CAM								
BRAC SAL			III 0 5		II 0.4	II 0.3		
BRAC STA								
BRAC TUR				I 0.2				
BROM CIL					II 0.5			
BRYO FRE				I 0.5				
BRYO FUS	IV 3.3	IV 2 4		III 2.4				
BRYU PSE					II 0.4		III 0.5	
CALA CAN		I 0 2		I 0.5	IV 9.5	V 5.0	V 11.0	
CALA INE			III 2 5					
CALA STR	V 1.0	II 0 4			I 1.9	II 1.7		
CALO SPP								
CALT PAL								
CAMP HIS					I 0.1			

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE

ECOSYSTEMATIC UNITS SPECIES	MW PL1	MW b PIS	MW PLA	MW Sb	MW WL	MW Ws	MW C	MW G
CAMP POL								
CAMP STE					I 0.1			
CARE AQU				III 2.3	III 11.0		V 44.0	
CARE AUR					II 0.3			
CARE CAP					II 0.5			
CARE [illegible]N				I 0.1				
CARE [illegible]				I 0.1				
CARE DIS				I 0.2		II 1.0		
CARE GYN				I 0.1				
CARE LIM				I 0.5				
CARE NOR					I 0.3	II 0.7		
CARE PEN								V 30.0
CARE ROS							III 25.0	
CAST RAU					II 0.3			
CERA PUR								
CERA SP					I 0.1			
CETR HAL	V 2.3	III 3.0		IV 2.9	III 2.0	V 5.0		
CETR NIV				II 0.4				
CETR PIN	V 1.0	III 1.4	III 0.5	V 3.9	II 1.3	II 1.7		
CHAM CAL				I 0.1				
CICU MAC							III 0.5	
CIRC ALP						II 0.3		
CLAD ARB	II 0.3			I 0.1				
CLAD CEN								
CLAD CHL		I 0.2						
CLAD COC				I 0.2				
CLAD COR		II 0.4		III 0.9				
CLAD CRI		I 0.2						
CLAD DEF				II 0.3				
CLAD ECM								
CLAD FUR				I 0.1				
CLAD SUL				I 0.1				
CLAD GRA	II 0.3	III 0.6		II 0.6				
CLAD MIT	IV 0.7	IV 4.6		IV 10.6	II 0.3			
CLAD MUL								
CLAD PYX								V 2.0
CLAD RAN	II 0.3			III 1.2				
CLAD STE				II 0.4				
CLAD UNC				I 0.1				
COMA UMB								V 1.0
CORA TRI					I 0.1			
CORN CAN	II 1.7	V 4.0	V 1.5	I 0.4		II 0.7		
CORN STO					II 2.1	V 29.0		
DELP GLA						IV 11.7		
DICR ACU								
DICR FRA								
DICR FUS		I 0.2						
DICR POL	II 0.3	I 0.2		I 0.1				

ECOSYSTEMATIC UNITS	MW PL1	MW b PIS	MW PLA	MW Sb	MW WL	MW Ws	MW C	MW G
SPECIES				PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE				
DICR SCO								
DICR UND				III 0.6	II 0.4	II 0.3		
DREP ADU					I 0.4		III 0.5	
DREP FLU				I 0.1				
DREP UNC					I 0.1			
DREP VER					I 0.1			
DROS ROT				I 0.1				
DRYO ASS						II 1.0		
DRYO CAR								
ELAE COM								
ELYM INN	II 0.3	II 0.4	V 5.5					
EMPE NIG				I 0.1				
EPIL ANG	V 1.0		V 1.0	I 0.1	III 0.8	IV 5.3	III 0.5	
EPIL CIL							III 0.5	
EPIL PAL					I 0.1			
EQUI ARV				II 3.9	IV 3.5	IV 3.3		
EQUI PRA					II 0.3	II 0.3		
EQUI SCI				I 0.2	I 0.1			
EQUI SYL		III 0.6	III 2.5	I 1.5		II 0.3		
ERIO VAG				I 0.7				
EURH PUL			III 0.5	I 0.1	I 0.3	II 0.3		
EVER MES	V 1.0	IV 0.8		V 4.5	III 2.0	IV 3.3		
FEST RUB				I 0.1				
FRAG VIR			V 1.0		III 1.6	IV 0.7		
GALI BOR			III 0.5		II 0.3	II 0.3		
GALI TRF					I 0.1		V 1.0	
GALI TRI					II 0.4	V 1.0		
GENT AMA					I 0.1			
GEOC LIV	II 0.3	II 0.4		I 0.1				
GEUM ALE						II 0.3		
GEUM TRI								V 1.0
GOOD REP								
GYMN DRY								
HAPL MIC								
HEDY BOR					I 0.1			
HELO BLA				I 0.2				
HERA LAN						II 1.7		
HIER UMB								
HYLO SPL	IV 3.7	IV 13.2	V 30.5	II 3.6	II 0.3	II 0.3		
HYPN PRA					I 0.1			
HYPO PHY	V 2.3	III 2.2		IV 3.4	I 0.6			
ICMA ERI		I 0.2		I 0.2				
JUNC BAI					I 0.3			
KOEL MAC								V 3.0

ECOSYSTEMATIC UNITS	MW PL1	MW b P1S	MW PLA	MW Sb	MW WL	MW Ws	MW C	MW G
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE							
LARI LAR				II 0.5	I 0.1			
LATH OCH			V 1.0					
LATH VEN								
LEDU GRO	IV 5.3	V 7.8		V 30.7	III 3.9			
LEDU PAL				I 0.2				
LEMN MIN							III 1.5	
LEPT PYR								
LINN BOR	V 9.7	III 1.8	III 0.5	I 0.2	II 0.4	II 1.7		
LONI DIO					I 0.1			
LONI INV					II 0.3			
LYCO ANN		I 0.6						
LYCO COM								
MAIA CAN	IV 2.3	II 0.4		I 0.2				
MARC POL							III 0.5	
MELI ALB								V 1.0
MERT PAN					II 1.6	V 2.7		
MITE NUD				I 0.1	II 0.4	IV 1.3		
MNIU SPI								
MOEH LAT					II 0.3	II 0.3		
MONE UNI								
MYLI AND				II 0.4				
ONCO WAH								
ORTH OBT								
ORTH OBT								
ORTH SEC	II 0.3			II 0.3				
ORTH SPE								
OSMO DEP								
OXYC MIC				III 0.6	II 0.3			
OXYT DEF								
OXYT SPL								V 1.0
PARM SEP								
PARM SUL	II 0.3	III 1.4	III 0.5	III 2.8	IV 2.6	V 6.7		
PARN FIM				I 0.1	I 0.1			
PARN PAL					II 0.3			
PEDI LAB				II 0.3				
PELT APH	IV 0.7	IV 1.2	III 0.5	II 0.4	I 0.1	II 0.3		
PELT CAN		I 0.2		III 0.5	III 0.5			
PELT MAL				I 0.1				
PELT POL				I 0.2	I 0.1			
PELT SP								
PETA PAL		III 0.6	V 1.0	I 0.1	I 0.1	II 0.3		
PETA SAG					II 0.3			
PETA VIT					I 0.1			
PHYS ADS								
PICE GLA	IV 3.7	I 4.0	III 7.5	I 0.3	II 0.3	II 0.3		
PICE MAR	II 1.7	IV 21.2		V 6.9	III 1.6			
PINU CON	V 31.7	V 22.0	V 25.0					
PLAG ASP								

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA

ECOSYSTEMATIC UNITS	MW PL1	MW b PIS	MW PLA	MW Sb	MW WL	MW Ws	MW C	MW G
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE							
PLAG CUS					I 0.1			
PLAG DRU								
PLAG ELL				I 0.5	II 0.8		III 0.5	
PLAG MED						II 0.3		
PLEU SCH	V 60.0	IV 32.0	V 3.0	III 19.7		II 0.3		
POAP RA								
POAS P				I 0.1				
POHL NUT		I 0.2		I 0.2	I 0.1			
POLE PUL				I 0.1	II 0.8			
POLY COM		II 0.6						
POLY JUN								
POLY PIL				I 0.1				
POLY STR				III 1.3	I 0.1			
POPU BAL			III 2.5			II 3.3		
POPU TRE	II 0.3	I 0.2	V 7.5					
POTE NOR					I 0.1			
POTE PAL					I 0.1		V 2.0	
POTE PEN								V 1.0
PRUN PEN								
PRUN VIR		I 0.2						
PTIL CIL		I 0.2						
PTIL CRI	V 10.0	V 8.4		I 4.1				
PTIL PUL		I 0.2		I 0.5				
PYLA POL			III 0.5		I 0.6	V 5.0		
PYRO ASA			III 0.5	I 0.1	II 0.3	II 0.3		
PYRO CHL	II 0.3			I 0.1	I 0.1			
PYRO ELL								
RANU GME							III 0.5	
RANU LAP				I 0.1				
RHIZ PSE							III 0.5	
RIBE AME								
RIBE GLA								
RIBE LAC								
RIBE OXY					II 0.6	V 4.0		
RIBE TRI					I 0.1	II 1.7		
RORI PAL							III 0.5	
ROSA ACI	II 0.3	II 0.8	V 10.0	I 0.3	I 0.1	IV 2.0		
ROSA WOO	II 0.3							V 5.0
RUBU ARC					II 1.1			
RUBU CHA				III 2.2	I 0.1			
RUBU IDA	II 0.3				I 0.6	IV 2.0		
RUBU PUB			V 1.0	I 0.1	IV 1.0	IV 2.0		
RUME BRI							III 0.5	
SALI ARB					I 4.4	II 26.7		
SALI ATH					I 2.5			
SALI BEB		II 0.6	III 0.5	I 0.4	II 16.3	IV 31.7		
SALI DIS					II 2.5	II 5.0		
SALI DRU								
SALI GLA				I 0.2	I 1.3			

ECOSYSTEMATIC UNITS	MW PL1	MW b PIS	MW PLA	MW Sb	MW WL	MW Ws	MW C	MW G
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE							
SALI MAC					I 1.9			
SALI MYR				II 3.3	II 6.3			
SALI PLA				I 1.9	II 15.0		V 3.0	
SALI PSE					I 5.0			
SALI PYR								
SALI SCO		I 0.4						
SALI SP					I 4.4			
SCHI PUR								
SCOR SCO					I 0.1			
SCOR TUR							III 15.0	
SCUT GAL							III 0.5	
SENE PAP					II 0.3			
SHEP CAN			V 2.0		I 0.1			
SMIL STE					I 0.1			
SMIL TRI				III 1.1	I 0.1			
SOLI GIG					I 0.1			
SOLI MIS								V 3.0
SOLI SPA								
SORB SCO								
SPHA ANG				I 0.5	I 0.1			
SPHA FUS				III 9.6				
SPHA NEM				I 0.1				
SPHA TER				I 3.2				
SPHA WAR				II 0.8	III 5.4			
SPHE INT								
SPIR ROM				I 0.1	II 0.3			
STAC PAL								V 1.0
STEL LON				I 0.1	I 0.1			
STER TOM		III 0.6						
STIP CUR								V 5.0
STIP VIR								V 15.0
SYMP ALB						II 0.3		
SYMP OCC								V 3.0
TARA OFF					I 0.1	II 0.3		V 1.0
TETR MNI	II 0.3							
THAL SPA								
THAL VEN					I 0.4	II 0.3		
THUI REC					I 0.1			
TOME NIT				II 9.3	III 8.4			
TRAG DUB								V 1.0
TRIE BOR					III 0.6			
URTI DIO						II 0.3		
USNE ALP		I 1.0		I 0.5				
USNE CAV	II 0.3			I 0.9				
USNE GLA				I 0.5				
USNE HIR	II 1.7	I 0.2						
USNE SCA				I 1.4				
USNE SOR	IV 0.7	III 3.0	III 0.5	IV 2.8	II 1.4	IV 3.3		

SUMMARY VEGETATION TABLE

RESOURCE INVENTORY

EDMONTON, ALBERTA
PAGE 14

ECOSYSTEMATIC UNITS	MW PL1	MW FIS b	MW PLA	MW SD	MW WL	MW Ws	MW C	MW G
SPECIES	PRESENCE CLASS AND MEAN SPECIES SIGNIFICANCE							
USNE SP	II 0.3							
VACC CAE	II 0.7	III 1.2						
VACC MYR	V 2.0	V 3.2						
VACC VIT	V 19.3	V 7.4		V 3.7	II 0.5			
VALE DIO					I 0.1			
VIBU EDU	II 0.7		III 5.0			IV 8.3		
VICI AME			III 0.5		II 0.4			V 1.0
VIOL ADU					I 0.1			
VIOL CAN								
VIOL REN			III 0.5	I 0.1		IV 0.7		
VIOL SPP					I 0.1			

VEGETATION DATA CODES ENCOUNTERED IN SUMMARY TABLE

CODE	LATIN NAME	FAMILY NAME	COMMON NAME
STRATA A			
ABIEBAL	Abies balsamea (L.) Mill.	PINACEAE	Balsam Fir (EHM)
LARILAR	Larix laricina (Du Roi) K. Koch	PINACEAE	Tamarack (EHM)
PICEGLA	Picea glauca (Moench) Voss	PINACEAE	White Spruce (EHM)
PICEMAR	Picea mariana (Mill.) BSP.	PINACEAE	Black Spruce (EHM)
PINUCON	Pinus contorta L.	PINACEAE	Lodgepole Pine (EHM)
POPUBAL	Populus balsamifera L.	SALICACEAE	Balsam Poplar (EHM)
POPUTRE	Populus tremuloides Michx.	SALICACEAE	Aspen (EHM)
STRATA B			
ALNUCRI	Alnus crispa (Ait.) Pursh	BETULACEAE	Green Alder (EHM)
ALNUTEN	Alnus tenuifolia Nutt.	BETULACEAE	River Alder (EHM)
AMELALN	Amelanchier alnifolia Nutt.	ROSACEAE	Saskatoon (EHM)
BETUGLA	Betula glandulosa Michx.	BETULACEAE	Dwarf Birch (EHM)
BETUNEO	Betula neoalaskana Sargent	BETULACEAE	Alaska Birch (EHM)
BETUOCC	Betula occidentalis Hook.	BETULACEAE	Water Birch (EHM)
BETUPAP	Betula papyrifera Marsh.	BETULACEAE	White Birch (EHM)
BETUPUM	Betula pumila L.	BETULACEAE	Dwarf Birch (EHM)
CHAMCAL	Chamaedaphne calyculata (L.) Moench	ERICACEAE	Leather-leaf (EHM)
CORNSTO	Cornus stolonifera Michx.	CORNACEAE	Red Osier Dogwood (EHM)
ELAECOM	Elaeagnus commutata Bernh. ex Rydb.	ELAEAGNACEAE	Silver-berry (EHM)
LEDUGRO	Ledum groenlandicum Oeder	ERICACEAE	Common Labrador Tea (EHM)
LEDUPAL	Ledum palustre L.	ERICACEAE	Northern Labbrador Tea (EHM)
LONIDIO	Lonicera dioica L.	CAPRIFOLIACEAE	Twining Honeysuckle (EHM)
PRUNPEN	Prunus pensylvanica L.f.	ROSACEAE	Pin Cherry (EHM)
PRUNVIR	Prunus virginiana L.	ROSACEAE	Choke Cherry (EHM)
LONIINV	Lonicera involucrata (Richards.) Banks	CAPRIFOLIACEAE	Bracted Honeysuckle (EHM)
RIBEAME	Ribes americanum Mill.	GROSSULARIACEAE	Wild Black Currant (EHM)
RIBEGLA	Ribes glandulosum Grauer	GROSSULARIACEAE	Skunk Currant (EHM)
RIBELAC	Ribes lacustre (Pers.) Poir.	GROSSULARIACEAE	Bristly Black Currant (EHM)
RIBEOXY	Ribes oxyacanthoides L.	GROSSULARIACEAE	Wild Gooseberry (EHM)
RIBETRI	Ribes triste Pall.	GROSSULARIACEAE	Wild Red Currant (EHM)
ROSAACI	Rosa acicularis Lindl.	ROSACEAE	Prickly Rose (EHM)
ROSAWOO	Rosa woodsii Lindl.	ROSACEAE	Common Wild Rose (EHM)
RUBUIDA	Rubus idaeus L.	ROSACEAE	Wild Red Raspberry (EHM)
SALIARB	Salix arbusculoides Anderss.	SALICACEAE	Shrubby Willow (ACB)
SALIATH	Salix athabascensis Raup	SALICACEAE	Bog Willow (ACB)
SALIBEB	Salix bebbiana Sarg.	SALICACEAE	Beaked Willow (ACB)
SALIDIS	Salix discolor Muhl.	SALICACEAE	Pussy Willow (ACB)
SALIDRU	Salix drummondiana Barr. ex Hook.	SALICACEAE	Satin Willow (ACB)
SALIGLA	Salix glauca L.	SALICACEAE	Smooth Willow (ACB)
SALIMAC	Salix maccalliana Rowlee	SALICACEAE	Velvet-fruited Willow (ACB)

SALIMYR	Salix myrtillifolia Anderss.	SALICACEAE	Myrtle-leaved Willow (ACB)
SALIPLA	Salix planifolia Pursh	SALICACEAE	Flat-leaved Willow (ACB)
SALIPSE	Salix pseudomonticola Ball	SALICACEAE	Willow
SALIPYR	Salix pyrifolia Anderss.	SALICACEAE	Balsam Willow (ACB)
SALISCO	Salix scouleriana Barr. ex Hook.	SALICACEAE	Scouler's Willow (B.C. Min of
SALISPP	Salix species	SALICACEAE	Willow
SHEPCAN	Shepherdia canadensis (L.) Nutt.	ELAEAGNACEAE	Canadian Buffalo-berry (EHM)
SORBSCO	Sorbus scopulina Greene	ROSACEAE	Western Mountain Ash (ACB)
SYMPALB	Symphoricarpos albus (L.) Blake	CAPRIFOLIACEAE	Snowberry (EHM)
SYMPOCC	Symphoricarpos occidentalis Hook.	CAPRIFOLIACEAE	Buckbrush (EHM)
VACCMYR	Vaccininum myrtilloides Michx.	ERICACEAE	Blueberry (EHM)
VIBUEDU	Viburnum edule (Michx.) Raf.	CAPRIFOLIACEAE	Low-bush Cranberry (EHM)

STRATA C

ACHIMIL	Achillea millefolium L.	COMPOSITAE	Common Yarrow (EHM)
ACHISIB	Achillea sibirica Ledeb.	COMPOSITAE	Many-flowered Yarrow (ACB)
ACTARUB	Actaea rubra (Ait.) Willd.	RANUNCULACEAE	Red and White Baneberry (EHM)
AGOSGLA	Agoseris glauca (Pursh) Raf.	COMPOSITAE	False Dandelion (ACB)
ANDRSEP	Androsace septentrionalis L.	PRIMULACEAE	Fairy Candelabra (EHM)
ANTEAPR	Antennaria aprica Greene	COMPOSITAE	Low Everlasting (ACB)
ARALNUD	Aralia nudicaulis L.	ARALIACEAE	Wild Sarsaparilla (EHM)
ARCTUVA	Arctostaphylos uva-ursi (L.) Spreng.	ERICACEAE	Common Bearberry (EHM)
ARNICOR	Arnica cordifolia Hook.	COMPOSITAE	Heart-leaved Arnica (ACB)
ARTEFRI	Artemisia frigida Willd.	COMPOSITAE	Pasture Sagewort (EHM)
ASTEBOR	Aster borealis (T. & G.) Prov.	COMPOSITAE	Aster
ASTECIL	Aster ciliolatus Lindl.	COMPOSITAE	Lindley's Aster (EHM)
ASTECON	Aster conspicuus Lindl.	COMPOSITAE	Showy Aster (EHM)
ASTELAE	Aster laevis L.	COMPOSITAE	Smooth Aster (EHM)
ASTEPUN	Aster puniceus L.	COMPOSITAE	Purple-stemmed Aster (EHM)
ASTRAME	Astragalus americanus (Hook.) M.E. Jones	LEGUMINOSAE	American Milk Vetch (ACB)
ASTRDAS	Astragalus dasyglottis Fisch ex DC.	LEGUMINOSAE	Purple Milk Vetch (ACB)
ASTREUC	Astragalus eucosmus Robins.	LEGUMINOSAE	Milk Vetch
ASTRVEX	Astragalus vexilliflexus Sheldon	LEGUMINOSAE	Few-flowered Milk Vetch (ACB)
BOTRLUN	Botrychium lunaria (L.) Sw.	OPHIOGLOSSACEAE	Moonwort (EHM)
CALTPAL	Caltha palustris L	RANUNCULACEAE	Marsh Marigold (EHM)
CASTRAU	Castilleja raupii Pennell	SCROPHULARIACEAE	Purple Paint-brush (ACB)
CICUMAC	Cicuta maculata L.	UMBELLIFERAE	Water Hemlock (ACB)
CIRCALP	Circaea alpina L.	ONAGRACEAE	Small Enchanter's Nightshade (ACB)
COMAUMB	Comandra umbellata (L.) Nutt.	SANTALACEAE	Bastard Toadflax (ACB)
CORATRI	Corallorhiza trifida Chatelan	ORCHIDACEAE	Pale Coral-root (EHM)
CORNCAN	Cornus canadensis L.	CORNACEAE	Bunchberry (EHM)
DELPGLA	Delphinium glaucum S. Wats.	RANUNCULACEAE	Tall Larkspur (EHM)
DROSROT	Drosera rotundifolia L.	DROSERACEAE	Sundew (EHM)
DRYOASS	Dryopteris assimilis S. Walker	POLYPODIACEAE	Broad Spinulose Shield Fern (EHM)
DRYOCAR	Dryopteris carthusiana (Vill.) H.P. Fuchs	POLYPODIACEAE	Narrow Spinulose Shield Fern (EHM)
EMPENIG	Empetrum nigrum L.	EMPETRACEAE	Crowberry (EHM)
EPILANG	Epilobium angustifolium L.	ONAGRACEAE	Fireweed (EHM)
EPILCIL	Epilobium ciliatum Raf.	ONAGRACEAE	Northern Willow-herb (ACB)
EPILPAL	Epilobium palustre L.	ONAGRACEAE	Marsh Willow-herb (ACB)
EQUIARV	Equisetum arvense L.	EQUISETACEAE	Common Horsetail (EHM)
EQUIPRA	Equisetum pratense Ehrh.	EQUISETACEAE	Meadow Horsetail (ACB)
EQUISCI	Equisetum scirpoides Michx.	EQUISETACEAE	Dwarf Scouring Rush (ACB)

EQUISYL	Equisetum sylvaticum L.	EQUISETACEAE	Woodland Horsetail (EHM)
FRAGVIR	Fragaria virginiana Duchesne	ROSACEAE	Wild Strawberry (EHM)
GALIBOR	Galium boreale L.	RUBIACEAE	Northern Bedstraw (EHM)
GALITRF	Galium trifidum L.	RUBIACEAE	Small Bedstraw (EHM)
GALITRI	Galium triflorum Michx.	RUBIACEAE	Sweet-scented Bedstraw (EHM)
GENTAMA	Gentianella amarella (L.) Borner	GENTIANACEAE	Felwort (EHM)
GEOCLIV	Geocaulon lividum (Richards.) Fern.	SANTALACEAE	Northern Comandra (ACB)
GEUMALE	Geum aleppicum Jacq.	ROSACEAE	Yellow Avens (EHM)
GEUMTRI	Geum triflorum Pursh	ROSACEAE	Old Man's Whiskers (EHM)
GOODREP	Goodyera repens (L.) R.Br.	ORCHIDACEAE	Lesser Rattlesnake Plantain (ACB)
GYMNDRY	Gymnocarpium dryopteris (L.) Newm.	POLYPODIACEAE	Oak Fern (EHM)
HEDYBOR	Hedysarum boreale Nutt.	LEGUMINOSAE	Northern Hedysarum (ACB)
HERALAN	Heracleum lanatum Michx.	UMBELLIFERAE	Cow Parsnip (EHM)
HIERUMB	Hieracium umbellatum L.	COMPOSITAE	Narrow-leaved Hawkweed (EHM)
LATHOCH	Lathyrus ochroleucus Hook.	LEGUMINOSAE	Cream-colored Vetchling (ACB)
LATHVEN	Lathyrus venosus Muhl.	LEGUMINOSAE	Wild Peavine (ACB)
LEMNMIN	Lemna minor L.	LEMNACEAE	Common Duckweed (EHM)
LEPTPYR	Leptarrhena pyrolifolia (D. Don) R.Br.	SAXIFRAGACEAE	Leather-leaved Saxifrage (EHM)
LINNBOR	Linnaea borealis L.	CAPRIFOLIACEAE	Twin-flower (EHM)
LYCOANN	Lycopodium annotinium L.	LYCOPODIACEAE	Stiff Club-moss (EHM)
LYCOCOM	Lycopodium complanatum L.	LYCOPODIACEAE	Ground Cedar (EHM)
MAIACAN	Maianthemum canadense Desf.	LILACEAE	Wild Lily-of-the-valley (EHM)
MELIALB	Melilotus alba Desr.	LEGUMINOSAE	White Sweet Clover (EHM)
MERTPAN	Mertensia paniculata (Ait.) G. Don.	BORAGINACEAE	Tall Mertensia (EHM)
MITENUD	Mitella nuda L.	SAXIFRAGACEAE	Bishop's Cap (EHM)
MOEHLAT	Moehringia lateriflora (L.) Fenzl.	CARYOPHYLLACEAE	Blunt-leaved Sandwort (ACB)
MONEUNI	Moneses uniflora (L.) A. Gray	PYROLACEAE	One-flowered Wintergreen (ACB)
ORTHSEC	Orthilia secunda (L.) House	PYROLACEAE	One-sided Wintergreen (EHM)
OSMODEP	Osmorhiza depauperata Philippi	UMBELLIFERAE	Sweet Cicely
OXYCMIC	Oxycoccus microcarpus Turcz.	ERICACEAE	Small Bog Cranberry (EHM)
OXYTDEF	Oxytropis deflexa (Pall.) DC.	LEGUMINOSAE	Reflexed Loco-weed (EHM)
OXYTSPL	Oxytropis splendens Dougl. ex Hook.	LEGUMINOSAE	Showy Loco-weed (EHM)
PARNFIM	Parnassia fimbriata Konig	PARNASSIACEAE	Fringed Grass-of-parnassus (ACB)
PARNPAL	Parnassia palustris L.	PARNASSIACEAE	Northern Grass-of-parnassus (ACB)
PEDILAB	Pedicularis labradorica Wirsing	SCROPHULARIACEAE	Labrador Lousewort (ACB)
PETAPAL	Petasites palmatus (Ait.) A. Gray	COMPOSITAE	Palmate-leaved Coltsfoot (EHM)
PETASAG	Petasites sagittatus (Pursh) A. Gray	COMPOSITAE	Arrow-leaved Coltsfoot (EHM)
PETAVIT	Petasites vitifolius Greene	COMPOSITAE	Vine-leaved Coltsfoot (ACB)
POLEPUL	Polemonium pulcherrimum Hook.	POLEMONIACEAE	Jacob's Ladder (EHM)
POTENOR	Potentilla norvegica L.	ROSACEAE	Rough Cinquefoil (EHM)
POTEPAL	Potentilla palustris (L.) Scop.	ROSACEAE	Marsh Cinquefoil (EHM)
POTEPEN	Potentilla pensylvanica L.	ROSACEAE	Prairie Cinquefoil (ACB)
PYROASA	Pyrola asarifolia Michx.	PYROLACEAE	Common Pink Wintergreen (EHM)
PYROCHL	Pyrola chlorantha Sw.	PYROLACEAE	Greenish-flowered Wintergreen
PYROELL	Pyrola elliptica Nutt.	PYROLACEAE	White Wintergreen (EHM)
RANUGME	Ranunculus gmelinii DC.	RANUNCULACEAE	Yellow Water Crowfoot (EHM)
RANULAP	Ranunculus lapponicus L.	RANUNCULACEAE	Lapland Buttercup (ACB)
RORIPAL	Rorippa palustris (L.) Besser	CRUCIFERAE	Yellow Cress (EHM)
RUBUARC	Rubus arcticus L.	ROSACEAE	Dwarf Raspberry (EHM)
RUBUCHA	Rubus chamaemorus L.	ROSACEAE	Cloudberry (EHM)
RUBUPUB	Rubus pubescens Raf.	ROSACEAE	Dewberry (EHM)
RUMEBRI	Rumex britannica L.	POLYGONACEAE	Water Dock (EHM)
SCUTGAL	Scutellaria galericulata L.	LABIATAE	Marsh Skullcap (ACB)
SENEPAP	Senecio pauperculus Michx.	COMPOSITAE	Balsam Groundsel (ACB)
SMILSTE	Smilacina stellata (L.) Desf.	LILIACEAE	Star-flowered Solomon's-seal (EHM)

SMILTRI	Smilacina trifolia (L.) Desf.	LILIACEAE	Three-leaved Solomon's-seal (EHM)
SOLIGIG	Solidago gigantea Ait.	COMPOSITAE	Late Goldenrod (ACB)
SOLIMIS	Solidago missouriensis Nutt.	COMPOSITAE	Low Goldenrod (ACB)
SOLISPA	Solidago spathulata DC.	COMPOSITAE	Mountain Goldenrod (ACB)
SPIRROM	Spiranthes romanzoffiana Cham. & Schlecht.	ORCHIDACEAE	Ladies'-tresses (EHM)
STACPAL	Stachys palustris L.	LABIATAE	Marsh Hedge-nettle (ACB)
STELLON	Stellaria longifolia Muhl.	CARYOPHYLLACEAE	Long-leaved Chickweed (EHM)
TARAOFF	Taraxacum officinale Weber	COMPOSITAE	Common Dandelion (EHM)
THALSPA	Thalictrum sparsiflorum Turcz.	RANUNCULACEAE	Flat-fruited Meadow Rue (EHM)
THALVEN	Thalictrum venulosum Trel.	RANUNCULACEAE	Veiny Meadow Rue (EHM)
TRAGDUB	Tragopogon dubius Scop.	COMPOSITAE	Goat's-beard (EHM)
TRIEBOR	Trientalis borealis Raf.	PRIMULACEAE	Northern Starflower (ACB)
URTIDIO	Urtica dioica L.	URTICACEAE	Common Nettle (EHM)
VACCCAE	Vaccininum caespitosum Michx.	ERICACEAE	Dwarf Bilberry (EHM)
VACCVIT	Vaccininum vitis-idaea L.	ERICACEAE	Bog Cranberry (EHM)
VALEDIO	Valeriana dioica L.	ADOXACEAE	Northern Valerian (ACB)
VICIAME	Vicia americana Muhl.	LEGUMINOSAE	Wild Vetch (EHM)
VIOLADU	Viola adunca J.E. Smith	VIOLACEAE	Early Blue Violet (EHM)
VIOLCAN	Viola canadensis L.	VIOLACEAE	Western Canada Violet (EHM)
VIOLSPP	Viola species	VIOLACEAE	
VIOLREN	Viola renifolia A. Gray	VIOLACEAE	Kidney-leaved Violet (EHM)

STRATA G

AGROSCA	Agrostis scabra Willd.	GRAMINEAE	Hair Grass (EHM)
AGROSTO	Agrostis stolonifera L.	GRAMINEAE	Redtop (ACB)
AGROSPP	Agropyron species	GRAMINEAE	
AGROTRA	Agropyron trachycaulum (Link) Malte	GRAMINEAE	Slender Wheat Grass (ACB)
BROMCIL	Bromus ciliatus L.	GRAMINEAE	Fringed Brome (EHM)
CALACAN	Calamagrostis canadensis (Michx.) Beauv.	GRAMINEAE	Marsh Reed Grass (EHM)
CALAINE	Calamagrostis inexpansa A. Gray	GRAMINEAE	Northern Reed Grass (EHM)
CALASTR	Calamagrostis stricta (Timm) Koeler	GRAMINEAE	Reed Grass
CAREAQU	Carex aquatilis Wahlenb.	CYPERACEAE	Water Sedge (ACB)
CAREAUR	Carex aurea Nutt.	CYPERACEAE	Golden Sedge (ACB)
CARECAP	Carex capillaris L.	CYPERACEAE	Hair-like Sedge (ACB)
CARECON	Carex concinna R.Br.	CYPERACEAE	Beautiful Sedge (ACB)
CAREDIA	Carex diandra Schrank	CYPERACEAE	Two-stamened Sedge (ACB)
CAREDIS	Carex disperma Dewey	CYPERACEAE	Two-seeded Sedge (ACB)
CAREGYN	Carex gynocrates Wormsk.	CYPERACEAE	Northern Bog Sedge (ACB)
CARELIM	Carex limosa L.	CYPERACEAE	Mud Sedge (ACB)
CARENOR	Carex norvegica Retz.	CYPERACEAE	Norway Sedge (ACB)
CAREPEN	Carex pensylvanica Lam.	CYPERACEAE	Sun-loving Sedge (ACB)
CAREROS	Carex rostrata Stokes	CYPERACEAE	Beaked Sedge (ACB)
ELYMINN	Elymus innovatus Beal	GRAMINEAE	Hairy Wild Rye (EHM)
ERIOVAG	Eriophorum vaginatum L.	CYPERACEAE	Sheathed Cotton Grass (ACB)
FESTRUB	Festuca rubra L.	GRAMINEAE	Red Fescue (EHM)
JUNCBAL	Juncus balticus Willd.	JUNCACEAE	Wire Rush (EHM)
KOELMAC	Koeleria macrantha (Ledeb.) J.A. Schultes	GRAMINEAE	June Grass (EHM)
POA PRA	Poa pratensis L.	GRAMINEAE	Kentucky Bluegrass (EHM)
POA SPP	Poa species	GRAMINEAE	
SCHIPUR	Schizachne purpurascens (Torr.) Swallen	GRAMINEAE	False Medic (EHM)
SPHEINT	Sphenopholis intermedia (Rydb.) Rydb.	GRAMINEAE	Slender Wedge Grass (EHM)
STIPCUR	Stipa curtiseta (A.S. Hitchc.) Barkworth	GRAMINEAE	Needle and Thread (EHM)

STIPVIR	Stipa viridula Trin.	GRAMINEAE	Green Needle Grass (EHM)

STRATA L

BRYOFRE	Bryoria fremontii Tuck.	USNEACEAE	Old Man's Beard
BRYOFUS	Bryoria fuscescens (Gyel.) Brodo & Hawks.	USNEACEAE	Old Man's Beard
CALOSPP	Caloplaca species		
CETRHAL	Cetraria halei W.Culb. & C.Culb.	PARMELIACEAE	
CETRNIV	Cetraria nivalis (L.) Ach.	PARMELIACEAE	
CETRPIN	Cetraria pinastri (Scop.) S.Gray	PARMELIACEAE	
CLADARB	Cladina arbuscula (Wallr.) Hale & W.Culb.	CLADONIACEAE	Reindeer Lichen
CLADCEN	Cladonia cenotea (Ach.) Schaer.	CLADONIACEAE	
CLADCHL	Cladonia chlorophaea (Florke ex Somm.) Spreng.	CLADONIACEAE	
CLADCOC	Cladonia coccifera (L.) Willd.	CLADONIACEAE	
CLADCOR	Cladonia cornuta (L.) Hoffm.	CLADONIACEAE	
CLADCRI	Cladonia crispata (Ach.) Flot.	CLADONIACEAE	
CLADDEF	Cladonia deformis (L.) Hoffm.	CLADONIACEAE	
CLADECM	Cladonia ecmocyna (Ach.) Nyl.	CLADONIACEAE	
CLADFUR	Cladonia furcata (Huds.) Schrad.	CLADONIACEAE	
CLADSUL	Cladonia sulphurina (Michx.) Fr.	CLADONIACEAE	
CLADGRA	Cladonia gracilis (L.) Willd.	CLADONIACEAE	
CLADMIT	Cladina mitis (Sandst.) Hale & W.Culb.	CLADONIACEAE	Reindeer Lichen
CLADMUL	Cladonia multiformis Merr.	CLADONIACEAE	
CLADPYX	Cladonia pyxidata (L.) Hoffm.	CLADONIACEAE	
CLADRAN	Cladina rangiferina (L.) Harm.	CLADONIACEAE	Reindeer Lichen
CLADSTE	Cladina stellaris (Opiz) Brodo	CLADONIACEAE	
CLADUNC	Cladonia uncialis (L.) Wigg.	CLADONIACEAE	
EVERMES	Evernia mesomorpha Nyl.	USNEACEAE	
HYPOPHY	Hypogymnia physodes (L.) W. Wats	PARMELIACEAE	
ICMAERI	Icmadophila ericetorum (L.) Zahlbr.	LECANORACEAE	
PARMSEP	Parmelia septentrionalis (Lynge.) Ahti	PARMELIACEAE	
PARMSUL	Parmelia sulcata Tayl.	PARMELIACEAE	
PELTAPH	Peltigera aphthosa (L.) Willd.	PELTIGERACEAE	Studded Leather Lichen
PELTCAN	Peltigera canina (L.) Willd.	PELTIGERACEAE	Dog Lichen
PELTMAL	Peltigera malacea (Ach.) Funck	PELTIGERACEAE	
PELTPOL	Peltigera polydactyla (Neck.) Hoffm.	PELTIGERACEAE	
PELTSPP	Peltigera species	PELTIGERACE	
PHYSADS	Physcia adscendens (Th. Fr.) Oliv.	PHYSCIACEAE	
STERTOM	Stereocaulon tomentosum Fr.	STEREOCAULACEAE	
USNEALP	Usnea alpina Mot.	USNEACEAE	Old Man's Beard
USNECAV	Usnea cavernosa Tuck.	USNEACEAE	Old Man's Beard
USNEGLA	Usnea glabrescens (Nyl. ex Vain.) Vain.	USNEACEAE	Old Man's Beard
USNEHIR	Usnea hirta (L.) Wigg.	USNEACEAE	Old Man's Beard
USNESCA	Usnea scabrata Nyl.	USNEACEAE	Old Man's Beard
USNESOR	Usnea sorediifera (Arn.) Lynge	USNEACEAE	Old Man's Beard
USNESPP	Usnea species	USNEACEAE	Old Man's Beard

STRATA M

AMBLSER	Amblystegium serpens (Hedw.)B.S.G.	AMBLYSTEGIACEAE	
AULAPAL	Aulacomnium palustre (Hedw.)Schwaegr.	AULACOMNIACEAE	Tufted Moss

BRACCAM	Brachythecium campestre (C. Mull.)B.S.G.	BRACHYTHECIACEAE	Brachythecium Moss
BRACSAL	Brachythecium salebrosum (Web. and Mohr)B.S.G.	BRACHYTHECIACEAE	Brachythecium Moss
BRACSTA	Brachythecium salebrosum (Brid.) B.S.G.	BRACHYTHECIACEAE	Brachythecium Moss
BRACTUR	Brachythecium turgidum (C.J. Hartm.)Kindb.	BRACHYTHECIACEAE	Brachythecium Moss
BRYUPSE	Bryum pseudotriquetrum (Hedw.)Gaertn., Meyer and Scherb.	BRYACEAE	Bryum Moss
CAMPHIS	Campylium hispidulum (Brid.)Mitt.	AMBLYSTEGIACEAE	
CAMPPOL	Campylium polygamum (B.S.G.)C. Jens.	AMBLYSTEGIACEAE	
CAMPSTE	Campylium stellatum (Hedw.)C. Jens.	AMBLYSTEGIACEAE	
CERAPUR	Ceratodon purpureus (Hedw.)Brid.	DITRICHACEAE	
CERASPP	Ceratodon species	DITRICHACEAE	
DICRACU	Dicranum acutifolium (Lindb. and H. Arnell)C. Jens. ex Weinm	DICRANACEAE	Cushion Moss
DICRFRA	Dicranum fragilifolium Lindb.	DICRANACEAE	Cushion Moss
DICRFUS	Dicranum fuscescens Turn.	DICRANACEAE	Cushion Moss
DICRPOL	Dicranum polysetum Sw.	DICRANACEAE	Cushion Moss
DICRSCO	Dicranum scoparium Hedw.	DICRANACEAE	Broom Moss
DICRUND	Dicranum undulatum Brid.	DICRANACEAE	Cushion Moss
DREPADU	Drepanocladus aduncus (Hedw.)Warnst.	AMBLYSTEGIACEAE	Brown Moss
DREPFLU	Drepanocladus fluitans (Hedw.)Warnst.	AMBLYSTEGIACEAE	Brown Moss
DREPUNC	Drepanocladus uncinatus (Hedw.)Warnst.	AMBLYSTEGIACEAE	Brown Moss
DREPVER	Drepanocladus vernicosus (Lindb. ex C. Hartm.)Warnst.	AMBLYSTEGIACEAE	Brown Moss
EURHPUL	Eurhynchium pulchellum (Hedw.)Jenn.	BRACHYTHECIACEAE	
HAPLMIC	Haplocladium microphyllum (Hedw.)Broth.	THUIDIACEAE	
HELOBLA	Helodium blandowii (Web. and Mohr)Warnst.	THUIDIACEAE	
HYLOSPL	Hylocomium splendens (Hedw.)B.S.G.	HYLOCOMIACEAE	Stair-step Moss
HYPNPRA	Hypnum pratense Koch ex Brid.	HYPNACEAE	
MARCPOL	Marchantia polymorpha L.	MARCHANTIACEAE	Liverwort
MNIUSPI	Mnium spinulosum B.S.G.	MNIACEAE	Mnium Moss
MYLIANO	Mylia anomala (Hook.) S. Gray	JUNGERMANNIACEAE	Liverwort
ONCOWAH	Oncophorus wahlenbergii Brid.	DICRANACEAE	
ORTHOBT	Orthotrichum obtusifolium Brid.	ORTHOTRICHACEAE	
ORTHSPE	Orthotrichum speciosum Nees ex Sturm	ORTHOTRICHACEAE	
PLAGASP	Plagiochila asplenioides (L.) Dum.	PLAGIOCHILACEAE	Liverwort
PLAGCUS	Plagiomnium cuspidatum (Hedw.)Kop.	MNIACEAE	Mnium Moss
PLAGDRU	Plagiomnium drummondii (Bruch and Schimp.)Kop	MNIACEAE	Mnium Moss
PLAGELL	Plagiomnium ellipticum (Brid.)Kop.	MNIACEAE	Mnium Moss
PLAGMED	Plagiomnium medium (B.S.G.)Kop.	MNIACEAE	
PLEUSCH	Pleurozium schreberi (Brid.)Mitt.	ENTODONTACEAE	Schreber´s Moss
POHLNUT	Pohlia nutans (Hedw.)Lindb.	BRYACEAE	Copper Wire Moss
POLYCOM	Polytrichum commune Hedw.	POLYTRICHACEAE	Hair Cap Moss
POLYJUN	Polytrichum juniperinum Hedw.	POLYTRICHACEAE	Hair Cap Moss
POLYPIL	Polytrichum piliferum Hedw.	POLYTRICHACEAE	Hair Cap Moss
POLYSTR	Polytrichum strictum Brid.	POLYTRICHACEAE	Hair Cap Moss
PTILCIL	Ptilidium ciliare (L.) Hampe	PTILIDIACEAE	Liverwort
PTILCRI	Ptilium crista-castrensis (Hedw.)De Not.	HYPNACEAE	Knight´s Plume Moss
PTILPUL	Ptilidium pulcherrimun (G. Web.) Hampe	PTILIDIACEAE	Liverwort
PYLAPOL	Pylaisiella polyantha (Hedw.)Grout	HYPNACEAE	
RHIZPSE	Rhizomnium pseudopunctatum (Bruch and Schimp.)Kop.	MNIACEAE	Mnium Moss
SCORSCO	Scorpidium scorpioides	AMBLYSTEGIACEAE	
SCORTUR	Scorpidium turgescens (T. Jens.)Loeske	AMBLYSTEGIACEAE	
SPHAANG	Sphagnum angustifolium (C. Jens. ex Russ.)C. Jens. in Tolf	SPHAGNACEAE	Peat Moss
SPHAFUS	Sphagnum fuscum (Schimp.)Klinggr.	SPHAGNACEAE	Peat Moss
SPHANEM	Sphagnum nemoreum Scop.	SPHAGNACEAE	Peat Moss
SPHATER	Sphagnum teres (Schimp.)Angstr. ex C. Hartm.	SPHAGNACEAE	Peat Moss
SPHAWAR	Sphagnum warnstorfii Russ.	SPHAGNACEAE	Peat Moss
TETRMNI	Tetraplodon mnioides (Hedw.)B.S.G.	SPLACHNACEAE	
THUIREC	Thuidium recognitum (Hedw.)Lindb.	THUIDIACEAE	
TOMENIT	Tomenthypnum nitens (Hedw.)Loeske	BRACHYTHECIACEAE	Golden Moss

```
                        MENSURATION SUMMARY
                     22:51:14     APR 24, 1985

VOLUME SAMPLING REGION:    6
MERCHANTABILITY LIMITS:
STUMP HEIGHT (M): 0.30     TOP DIAMETER IB (CM): 7.0
```

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	122.33	10.95	336.37	94.83	70.18		324.02	105.01	
CONIFEROUS	0.38		5.12	1.27	0.14		3.20	0.67	
DECIDUOUS	121.95	10.95	336.37	94.58	70.04		324.02	105.10	
SPECIES VOLUME (M3/HA)									
SW	0.38		5.12	1.27	0.14		3.20	0.67	15.5
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	118.45	10.95	336.37	94.61	68.44		324.02	105.10	18.0
PB	3.43		43.80	9.41	1.61		18.50	4.54	17.0
BW	0.08		1.73	0.36					
LIVE STEMS/HA									
CONIFEROUS	13.04		200.00	45.77					
DECIDUOUS	1727.53	600.00	3600.00	744.89					
TOTAL	1740.58	600.00	3600.00	752.47					
BASAL AREA (M2/HA)									
CONIFEROUS	0.11		1.90	0.41					
DECIDUOUS	17.60	3.10	38.40	8.59					
TOTAL	17.71	3.10	39.00	8.64					
M.A.I. (M3/HA/YR)	2.49	0.39	5.87	1.39	1.22		5.14	1.70	
STAND AGE (YEARS)	44.4	28.0	82.0	13.0					
CANOPY HEIGHT (M)	13.1	7.8	23.1	4.1					
HGT DOM+CODOM (M)	14.4	7.5	25.5	4.5					
MEAN DBH (CM)	11.5	7.7	25.4	4.4					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PLOT NUMBER	17	46	47	139	115	7	68	138	29	66	54	35
TOTAL VOL/HA	79.08	101.34	34.71	306.33	10.95	143.54	135.75	61.49	336.27	73.16	77.18	53.67
CONIFER	5.12								3.53			
DECID	73.96	101.34	34.71	306.33	10.95	143.54	135.75	61.49	332.74	73.16	77.18	53.67
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	5.12								3.53			
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	73.96	101.34	34.71	306.33	10.95	143.54	91.95	61.49	332.74	68.89	75.04	50.37
PB							43.80			4.27	2.14	1.57
BW												1.73
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	11.0								20.0			
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	16.0	15.0	14.0	21.0	16.0	19.0	20.0	16.0	17.0	20.0	18.0	17.0
PB							19.0					17.0
BW												
LIVE TREES TOT	2400.0	2000.0	1400.0	1050.0	650.0	3600.0	2200.0	1700.0	1900.0	1300.0	2400.0	1900.0
CONIFER	200.0								100.0			
DECID	2200.0	2000.0	1400.0	1050.0	650.0	3600.0	2200.0	1700.0	1800.0	1300.0	2400.0	1900.0
M.A.I. TOT VOL	1.9	1.8	0.9	5.4	0.4	3.3	3.3	1.5	5.9	2.1	1.9	1.5
STAND AGE	41.5	55.0	41.0	56.5	28.0	43.0	41.3	40.5	52.3	33.5	40.5	34.0
CANOPY HEIGHT	10.3	11.5	8.9	20.1	7.8	13.7	13.8	9.5	18.5	12.5	11.6	10.2
HTD DOM+CODOM	11.5	12.8	9.5	20.8	7.5	15.7	15.5	11.4	16.8	15.5	13.0	10.3
MEAN DIAMETER	9.4	10.1	8.7	19.8	7.7	8.8	10.6	9.6	15.8	10.4	8.7	8.6

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A1 POPULUS TREMULOIDES/SHEPHERDIA CANADENSIS

PLOT NUMBER	22	32	21	64	9	62	63	109	116	59	80	
TOTAL VOL/HA	187.35	336.37	109.55	46.28	224.05	55.22	56.54	82.69	140.37	50.90	110.79	
CONIFER												
DECID	187.35	336.37	109.55	46.28	224.05	55.22	56.54	82.69	140.37	50.90	110.79	
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	187.35	336.37	108.19	45.15	213.81	55.22	56.54	82.69	138.79	50.90	97.99	
PB			1.36	1.13	10.24				1.58		12.80	
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	22.0	21.0	16.0	17.0	18.0	18.0	18.0	17.0	20.0	17.0	18.0	
PB					15.0							
BW												
LIVE TREES TOT	1600.0	600.0	1700.0	1400.0	1033.3	2200.0	2000.0	1000.0	950.0	1750.0	3300.0	
CONIFER												
DECID	1600.0	600.0	1700.0	1400.0	1033.3	2200.0	2000.0	1000.0	950.0	1750.0	3300.0	
M.A.I. TOT VOL	3.4	4.9	2.3	1.1	2.9	1.8	1.9	2.0	2.7	1.5	2.9	
STAND AGE	54.5	68.5	47.5	40.0	82.0	30.0	30.0	41.5	51.5	33.5	34.0	
CANOPY HEIGHT	16.7	23.1	14.5	11.1	19.2	9.3	9.8	11.0	16.6	10.4	11.8	
HTD DOM+CODOM	21.0	25.5	15.5	12.0	20.2	10.0	10.5	13.5	19.0	10.8	12.0	
MEAN DIAMETER	13.2	25.4	10.7	8.8	17.3	8.5	8.8	12.5	14.6	8.6	8.6	

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A2 P. TREMULOIDES/ROSA/EQUISETUM PRATENSE

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	273.85	172.38	440.35	145.34	159.80	47.95	310.33	135.40	
CONIFEROUS									
DECIDUOUS	273.85	172.38	440.35	145.34	159.80	47.95	310.33	135.40	
SPECIES VOLUME (M3/HA)									
SW									
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	273.85	172.38	440.35	145.34	159.80	47.95	310.33	135.40	21.3
PB									
BW									
LIVE STEMS/HA									
CONIFEROUS									
DECIDUOUS	2966.67	2800.00	3100.00	152.76					
TOTAL	2966.67	2800.00	3100.00	152.76					
BASAL AREA (M2/HA)									
CONIFEROUS									
DECIDUOUS	34.10	27.10	44.40	9.11					
TOTAL	34.10	27.10	44.40	9.11					
M.A.I. (M3/HA/YR)	6.23	4.26	9.47	2.83	3.58	1.18	6.67	2.81	
STAND AGE (YEARS)	43.0	40.5	46.5	3.1					
CANOPY HEIGHT (M)	16.2	13.7	20.8	4.0					
HGT DOM+CODOM (M)	18.1	14.5	23.3	4.6					
MEAN DBH (CM)	11.7	10.6	13.0	1.2					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A2 P. TREMULOIDES/ROSA/EQUISETUM PRATENSE

PLOT NUMBER	134	76	42									
TOTAL VOL/HA	208.83	172.38	440.35									
CONIFER												
DECID	208.83	172.38	440.35									
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	208.83	172.38	440.35									
PB												
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	20.0	19.0	25.0									
PB												
BW												
LIVE TREES TOT	2800.0	3000.0	3100.0									
CONIFER												
DECID	2800.0	3000.0	3100.0									
M.A.I. TOT VOL	5.0	4.3	9.5									
STAND AGE	42.0	40.5	46.5									
CANOPY HEIGHT	14.1	13.7	20.8									
HTD DOM+CODOM	16.5	14.5	23.3									
MEAN DIAMETER	11.5	10.6	13.0									

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A3.0 P. TREMULOIDES/VIBURNUM-ROSA/ELYMUS INNOVATUS PHASE

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	141.93	43.61	324.37	78.50	63.16		308.57	87.17	
CONIFEROUS	2.99		25.41	7.26	1.94		23.25	6.71	
DECIDUOUS	138.94	43.61	298.95	73.20	61.23		285.31	81.28	
SPECIES VOLUME (M3/HA)									
SW	2.92		25.41	7.26	1.94		23.25	6.71	14.8
SB	0.08		0.92	0.27					
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	129.07	43.61	272.24	66.01	54.61		260.82	74.07	18.4
PB	9.87		91.70	26.89	6.61		54.85	16.74	17.0
BW									
LIVE STEMS/HA									
CONIFEROUS	52.77		300.00	92.61					
DECIDUOUS	2380.56	766.70	3200.00	705.70					
TOTAL	2433.33	900.00	3200.00	692.93					
BASAL AREA (M2/HA)									
CONIFEROUS	0.63		4.30	1.28					
DECIDUOUS	20.81	9.10	31.70	6.88					
TOTAL	21.47	9.10	33.40	7.49					
M.A.I. (M3/HA/YR)	3.01	1.30	4.26	1.02	1.11		3.27	1.09	
STAND AGE (YEARS)	43.9	33.5	79.7	12.4					
CANOPY HEIGHT (M)	13.3	7.3	19.9	3.2					
HGT DOM+CODOM (M)	15.0	9.4	24.1	4.3					
MEAN DBH (CM)	10.6	8.0	20.8	3.4					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A3.0 P. TREMULOIDES/VIBURNUM-ROSA/ELYMUS INNOVATUS PHASE

PLOT NUMBER	65	114	53	112	23	60	39	124	57	12	72	73
TOTAL VOL/HA	151.40	214.72	43.61	135.16	173.56	60.75	195.73	324.37	122.93	75.72	125.77	79.47
CONIFER		1.96			5.05			25.41		3.49		
DECID	151.40	212.77	43.61	135.16	168.52	60.75	195.73	298.95	122.93	72.23	125.77	79.47
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW		1.96			5.05			25.41		2.58		
SB										0.92		
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	151.40	212.77	43.61	135.16	168.52	60.75	104.03	272.24	122.93	72.23	125.77	79.47
PB							91.70	26.71				
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW		16.0			17.0			17.0		9.0		
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	18.0	21.0	17.0	17.0	21.0	16.0	19.0	19.0	20.0	12.0	23.0	18.0
PB							17.0					
BW												
LIVE TREES TOT	3100.0	2200.0	1750.0	2800.0	2500.0	2500.0	3200.0	900.0	3100.0	3000.0	1750.0	2400.0
CONIFER		100.0			100.0			133.3		300.0		
DECID	3100.0	2100.0	1750.0	2800.0	2400.0	2500.0	3200.0	766.7	3100.0	2700.0	1750.0	2400.0
M.A.I. TOT VOL	3.6	4.3	1.3	3.1	3.5	1.6	4.1	3.4	3.5	1.9	3.7	2.1
STAND AGE	41.5	46.7	33.5	44.0	47.0	37.5	47.8	79.7	35.0	41.3	34.0	38.5
CANOPY HEIGHT	13.0	16.7	10.4	11.8	15.4	10.5	12.9	19.9	13.5	7.3	14.3	13.4
HTD DOM+CODOM	14.0	19.5	10.8	13.5	19.0	10.3	15.3	24.1	14.0	9.4	17.0	13.0
MEAN DIAMETER	9.9	12.1	8.1	10.1	10.6	8.0	10.9	20.8	8.9	9.3	10.8	8.2

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A3.1 P. TREMULOIDES/VIBURNUM-ROSA/CORNUS CANADENSIS PHASE

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	229.87	88.38	386.28	106.64	188.71	10.54	375.06	136.81	
CONIFEROUS	0.07		0.50	0.19					
DECIDUOUS	229.80	87.89	386.28	106.75	188.71	10.54	375.06	136.81	
SPECIES VOLUME (M3/HA)									
SW	0.07		0.50	0.19					
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	227.32	85.76	386.28	109.22	188.16	10.54	375.06	137.28	18.4
PB	1.08		5.46	2.09					
BW	1.39		9.76	3.69	0.55		3.87	1.46	
LIVE STEMS/HA									
CONIFEROUS	7.14		50.00	18.90					
DECIDUOUS	1300.00	325.00	2800.00	792.28					
TOTAL	1307.14	325.00	2800.00	791.45					
BASAL AREA (M2/HA)									
CONIFEROUS	0.03		0.20	0.08					
DECIDUOUS	26.40	13.80	34.20	8.09					
TOTAL	26.43	14.00	34.20	8.04					
M.A.I. (M3/HA/YR)	3.27	1.43	5.06	1.19	2.51	0.26	4.77	1.68	
STAND AGE (YEARS)	69.3	40.0	116.0	23.7					
CANOPY HEIGHT (M)	17.8	13.5	24.4	4.1					
HGT DOM+CODOM (M)	19.8	14.8	26.0	3.7					
MEAN DBH (CM)	18.2	9.7	35.0	8.9					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A3.1 P. TREMULOIDES/VIBURNUM-ROSA/CORNUS CANADENSIS PHASE

PLOT NUMBER	108	30	55	74	126	33	132					
TOTAL VOL/HA	134.98	283.46	386.28	88.38	285.39	279.98	150.61					
CONIFER				0.50								
DECID	134.98	283.46	386.28	87.89	285.39	279.98	150.61					
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW				0.50								
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	134.98	283.46	386.28	85.76	285.39	279.98	135.40					
PB				2.12			5.46					
BW							9.76					
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	21.0	22.0	18.0	15.0	18.0	16.0	19.0					
PB												
BW												
LIVE TREES TOT	2800.0	675.0	325.0	1250.0	1500.0	1050.0	1550.0					
CONIFER				50.0								
DECID	2800.0	675.0	325.0	1200.0	1500.0	1050.0	1550.0					
M.A.I. TOT VOL	3.4	5.1	3.3	1.4	3.8	3.8	2.1					
STAND AGE	40.0	56.0	116.0	60.0	74.5	74.0	64.3					
CANOPY HEIGHT	13.7	20.1	24.4	13.5	20.4	17.8	14.7					
HTD DOM+CODOM	16.3	22.0	26.0	14.8	21.0	18.3	20.0					
MEAN DIAMETER	9.7	23.4	35.0	11.7	16.1	19.7	11.6					

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A4 P. TREMULOIDES/VIBURNUM-ROSA-CORNUS STOLONIFERA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	401.93	241.13	719.78	158.78	379.38	222.41	694.38	158.90	
CONIFEROUS	1.45		7.96	2.88	0.38		3.38	1.13	
DECIDUOUS	400.48	240.71	719.78	159.60	379.01	222.41	694.38	159.02	
SPECIES VOLUME (M3/HA)									
SW	1.45		7.96	2.88	0.38		3.38	1.13	17.0
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	366.58	208.83	634.75	135.77	347.27	201.73	612.05	134.99	23.1
PB	32.27		85.03	32.92	30.25		82.33	32.39	
BW	1.63		14.71	4.90	1.49		13.41	4.47	
LIVE STEMS/HA									
CONIFEROUS	44.44		300.00	99.04					
DECIDUOUS	824.08	350.00	1550.00	369.06					
TOTAL	868.52	375.00	1850.00	436.26					
BASAL AREA (M2/HA)									
CONIFEROUS	0.33		1.90	0.66					
DECIDUOUS	35.59	22.30	58.30	11.26					
TOTAL	35.93	22.30	58.30	11.14					
M.A.I. (M3/HA/YR)	5.11	3.26	7.98	1.46	4.82	3.15	7.70	1.44	
STAND AGE (YEARS)	69.5	57.0	84.0	9.0					
CANOPY HEIGHT (M)	23.5	16.8	27.5	3.5					
HGT DOM+CODOM (M)	26.0	18.8	32.5	4.3					
MEAN DBH (CM)	23.0	14.4	27.6	4.0					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A4 P. TREMULOIDES/VIBURNUM-ROSA-CORNUS STOLONIFERA

PLOT NUMBER	51	52	2	38	28	8	20	48	81			
TOTAL VOL/HA	509.65	719.78	280.88	247.31	347.19	241.13	315.57	441.65	514.20			
CONIFER					4.65	0.42	7.96					
DECID	509.65	719.78	280.88	247.31	342.53	240.71	307.61	441.65	514.20			
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW					4.65	0.42	7.96					
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	470.80	634.75	280.88	208.83	342.53	226.00	290.98	411.77	432.64			
PB	38.85	85.03		38.48			16.64	29.88	81.56			
BW						14.71						
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW					17.0							
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	25.0	25.0	19.0	23.0	25.0	22.0	21.0	23.0	25.0			
PB												
BW												
LIVE TREES TOT	950.0	1100.0	766.7	375.0	425.0	650.0	1850.0	850.0	850.0			
CONIFER					75.0	25.0	300.0					
DECID	950.0	1100.0	766.7	375.0	350.0	625.0	1550.0	850.0	850.0			
M.A.I. TOT VOL	6.4	8.0	4.6	3.3	4.6	3.4	5.1	4.9	5.8			
STAND AGE	74.0	79.5	61.0	64.0	64.7	66.0	57.0	84.0	75.0			
CANOPY HEIGHT	24.8	26.1	19.9	24.8	24.6	21.1	16.8	25.6	27.5			
HTD DOM+CODOM	28.0	32.5	18.8	24.6	28.8	24.0	21.0	27.5	29.0			
MEAN DIAMETER	23.2	25.1	22.4	26.7	27.6	19.8	14.4	23.3	24.4			

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A5 P. TREMULOIDES/ALNUS CRISPA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	362.74	139.52	720.08	185.12	321.81	87.98	675.01	184.37	
CONIFEROUS	17.20		95.36	38.21	16.71		92.86	37.17	
DECIDUOUS	345.54	139.27	720.08	190.80	305.10	87.98	675.01	186.83	
SPECIES VOLUME (M3/HA)									
SW	17.20		95.36	38.21	16.71		92.86	37.17	19.5
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	301.96	131.30	720.08	207.07	264.61	87.98	675.01	197.72	19.3
PB	43.58		268.32	81.56	40.50		252.08	76.47	21.0
BW									
LIVE STEMS/HA									
CONIFEROUS	9.09		50.00	16.85					
DECIDUOUS	1740.91	200.00	2900.00	963.80					
TOTAL	1750.00	225.00	2900.00	953.74					
BASAL AREA (M2/HA)									
CONIFEROUS	1.28		7.30	2.83					
DECIDUOUS	39.72	17.40	80.90	20.19					
TOTAL	41.00	21.10	80.90	19.12					
M.A.I. (M3/HA/YR)	5.27		10.67	3.31	4.61		10.00	3.18	
STAND AGE (YEARS)	62.4		123.3	34.3					
CANOPY HEIGHT (M)	18.7	12.1	28.7	5.0					
HGT DOM+CODOM (M)	21.1		31.7	8.6					
MEAN DBH (CM)	19.1	11.8	35.5	7.7					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A5 P. TREMULOIDES/ALNUS CRISPA

PLOT NUMBER	4	88	93	96	122	45	13	131	121	19	125	
TOTAL VOL/HA	139.52	566.44	550.40	218.38	307.02	720.08	208.12	176.61	384.04	412.24	307.28	
CONIFER	0.24				95.36				93.58			
DECID	139.27	566.44	550.40	218.38	211.67	720.08	208.12	176.61	290.46	412.24	307.28	
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	0.24				95.36				93.58			
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	139.27	566.44	550.40	131.30	211.67	720.08	208.12	176.61	219.75	143.93	253.99	
PB				87.08					70.71	268.32	53.28	
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW					21.0				18.0			
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	18.0	20.0	19.0		20.0	19.0	18.0	15.0	20.0	22.0	22.0	
PB										24.0	18.0	
BW												
LIVE TREES TOT	1300.0	2900.0	2600.0	1100.0	225.0	2600.0	2500.0	2600.0	375.0	1300.0	1750.0	
CONIFER	50.0				25.0				25.0			
DECID	1250.0	2900.0	2600.0	1100.0	200.0	2600.0	2500.0	2600.0	350.0	1300.0	1750.0	
M.A.I. TOT VOL	2.8	8.0	9.0		2.5	10.7	4.8	3.3	2.9	8.0	5.9	
STAND AGE	49.5	70.5	61.0		123.3	67.5	43.0	53.5	118.0	53.0	47.0	
CANOPY HEIGHT	13.4	19.4	19.0	17.6	28.7	19.2	12.1	12.8	24.5	20.9	17.6	
HTD DOM+CODOM	15.3	22.3	19.8		31.7	21.0	14.5	12.8	30.0	21.9	22.0	
MEAN DIAMETER	13.9	15.6	17.4	16.8	35.5	19.2	12.6	11.8	31.9	20.2	14.7	

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW A6 POPULUS TREMULOIDES-POPULUS BALSAMIFERA/CORNUS STOLONIFERA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	290.65	179.69	488.71	110.07	241.17	88.20	471.36	141.07	
CONIFEROUS	0.84		5.02	2.05	0.74		4.42	1.80	
DECIDUOUS	289.81	179.69	488.71	110.14	240.44	88.20	471.36	141.06	
SPECIES VOLUME (M3/HA)									
SW	0.84		5.02	2.05	0.74		4.42	1.80	17.0
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	156.18	58.88	246.48	69.13	127.28	56.13	237.54	79.37	21.4
PB	133.62	57.70	242.22	71.09	113.15	32.07	233.82	81.64	21.0
BW									
LIVE STEMS/HA									
CONIFEROUS	8.33		50.00	20.41					
DECIDUOUS	1627.77	733.30	3400.00	1069.05					
TOTAL	1636.10	733.30	3400.00	1069.92					
BASAL AREA (M2/HA)									
CONIFEROUS	0.18		1.10	0.45					
DECIDUOUS	32.70	22.40	47.60	9.02					
TOTAL	32.87	22.40	47.60	9.05					
M.A.I. (M3/HA/YR)	4.16		6.50	2.27	3.18		5.60	2.18	
STAND AGE (YEARS)	43.3		59.0	23.0					
CANOPY HEIGHT (M)	18.9	13.3	23.7	4.0					
HGT DOM+CODOM (M)	20.2		24.2	8.6					
MEAN DBH (CM)	17.5	10.7	26.5	6.2					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW A6 POPULUS TREMULOIDES-POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PLOT NUMBER	137	113	15	82	130	71						
TOTAL VOL/HA	330.23	285.90	232.64	226.72	488.71	179.69						
CONIFER		5.02										
DECID	330.23	280.88	232.64	226.72	488.71	179.69						
SPECIES VOL/HA												
SW		5.02										
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	167.60	218.68	123.49	58.88	246.48	121.98						
PB	162.62	62.20	109.15	167.84	242.22	57.70						
BW												
SI M@50 YEARS												
SW		17.0										
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	24.0	23.0	19.0	20.0		21.0						
PB	24.0	18.0	16.0	23.0		24.0						
BW												
LIVE TREES TOT	800.0	1750.0	3400.0	733.3	833.3	2300.0						
CONIFER		50.0										
DECID	800.0	1700.0	3400.0	733.3	833.3	2300.0						
M.A.I. TOT VOL	5.7	6.5	4.0	3.9		4.8						
STAND AGE	59.0	47.5	58.8	58.0		36.3						
CANOPY HEIGHT	23.7	17.4	13.3	19.4	22.9	16.5						
HTD DOM+CODOM	24.2	19.0	17.3	21.5		19.2						
MEAN DIAMETER	21.3	15.3	11.4	20.1	26.5	10.7						

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - Bw BETULA PAPYRIFERA COMMUNITY

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	130.60	130.60	130.60		64.24	64.24	64.24		
CONIFEROUS									
DECIDUOUS	130.60	130.60	130.60		64.24	64.24	64.24		
SPECIES VOLUME (M3/HA)									
SW									
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW									
PB									
BW	130.60	130.60	130.60		64.24	64.24	64.24		18.0
LIVE STEMS/HA									
CONIFEROUS									
DECIDUOUS	2300.00	2300.00	2300.00						
TOTAL	2300.00	2300.00	2300.00						
BASAL AREA (M2/HA)									
CONIFEROUS									
DECIDUOUS	23.00	23.00	23.00						
TOTAL	23.00	23.00	23.00						
M.A.I. (M3/HA/YR)	3.04	3.04	3.04		1.49	1.49	1.49		
STAND AGE (YEARS)	43.0	43.0	43.0						
CANOPY HEIGHT (M)	12.8	12.8	12.8						
HGT DOM+CODOM (M)	14.5	14.5	14.5						
MEAN DBH (CM)	11.0	11.0	11.0						

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : Bw BETULA PAPYRIFERA COMMUNITY

PLOT NUMBER	104											
TOTAL VOL/HA	130.60											
CONIFER												
DECID	130.60											
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW	130.60											
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW	18.0											
LIVE TREES TOT	2300.0											
CONIFER												
DECID	2300.0											
M.A.I. TOT VOL	3.0											
STAND AGE	43.0											
CANOPY HEIGHT	12.8											
HTD DOM+CODOM	14.5											
MEAN DIAMETER	11.0											

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW PB1 POPULUS BALSAMIFERA/CORNUS STOLONIFERA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	232.10	117.33	532.59	153.19	205.75	74.43	514.46	157.74	
CONIFEROUS									
DECIDUOUS	232.10	117.33	532.59	153.19	205.75	74.43	514.46	157.74	
SPECIES VOLUME (M3/HA)									
SW									
SB									
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	2.02		12.12	4.95	1.94		11.66	4.76	
PB	230.08	117.33	520.47	148.44	203.81	74.43	502.80	153.18	20.2
BW									
LIVE STEMS/HA									
CONIFEROUS									
DECIDUOUS	1104.17	700.00	1450.00	310.01					
TOTAL	1104.17	700.00	1450.00	310.01					
BASAL AREA (M2/HA)									
CONIFEROUS									
DECIDUOUS	26.62	14.30	48.80	12.42					
TOTAL	26.62	14.30	48.80	12.42					
M.A.I. (M3/HA/YR)	4.13	2.52	6.43	1.42	3.58	1.75	6.21	1.58	
STAND AGE (YEARS)	52.6	42.5	81.0	14.4					
CANOPY HEIGHT (M)	17.9	15.2	23.9	3.3					
HGT DOM+CODOM (M)	18.4		22.0	7.9					
MEAN DBH (CM)	17.1	11.6	26.8	5.2					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW PB1 POPULUS BALSAMIFERA/CORNUS STOLONIFERA

PLOT NUMBER	40	41	101	79	36	37						
TOTAL VOL/HA	208.74	210.59	200.06	123.30	532.59	117.33						
CONIFER												
DECID	208.74	210.59	200.06	123.30	532.59	117.33						
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW					12.12							
PB	208.74	210.59	200.06	123.30	520.47	117.33						
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB	21.0	17.0	23.0	22.0	18.0	20.0						
BW												
LIVE TREES TOT	1450.0	1100.0	1100.0	700.0	825.0	1450.0						
CONIFER												
DECID	1450.0	1100.0	1100.0	700.0	825.0	1450.0						
M.A.I. TOT VOL	4.5	4.0	4.6	2.5	6.4	2.8						
STAND AGE	46.0	53.0	44.0	49.0	81.0	42.5						
CANOPY HEIGHT	16.7	15.3	19.3	17.2	23.9	15.2						
HTD DOM+CODOM	17.8	15.8	20.5	22.0		15.8						
MEAN DIAMETER	15.0	17.5	16.0	15.5	26.8	11.6						

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW SwA PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	334.04	173.42	575.08	127.76	295.50	107.92	544.46	139.98	
CONIFEROUS	178.13	12.73	474.53	132.00	152.32		448.02	134.43	
DECIDUOUS	155.91	45.70	252.81	76.23	143.19	42.07	241.31	71.15	
SPECIES VOLUME (M3/HA)									
SW	177.60	12.73	474.53	132.24	151.90		448.02	134.73	16.2
SB	0.53		5.31	1.68	0.41		4.14	1.31	13.0
SE									
PL									
PJ									
FA									
FB									
LA									
LT									
FD									
AW	135.95	45.70	246.27	63.47	124.63	42.07	237.27	56.50	17.7
PB	19.42		84.21	34.81	18.56		80.91	33.32	
BW	0.54		5.41	1.71					
LIVE STEMS/HA									
CONIFEROUS	876.67	150.00	1900.00	646.56					
DECIDUOUS	538.33	200.00	2000.00	550.65					
TOTAL	1415.00	400.00	2600.00	772.46					
BASAL AREA (M2/HA)									
CONIFEROUS	20.61	2.70	47.80	12.37					
DECIDUOUS	17.33	7.00	28.00	8.24					
TOTAL	37.93	28.40	58.40	9.26					
M.A.I. (M3/HA/YR)	3.14	1.11	5.65	1.27	2.67	1.06	5.33	1.25	
STAND AGE (YEARS)	87.3	62.5	131.0	21.7					
CANOPY HEIGHT (M)	17.5	12.5	25.8	4.1					
HGT DOM+CODOM (M)	23.4	15.4	29.1	4.7					
MEAN DBH (CM)	19.5	12.1	35.3	7.4					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW SwA PICEA GLAUCA-POPULUS TREMULOIDES/VIBURNUM EDULE-ROSA

PLOT NUMBER	86	102	56	119	58	31	120	97	78	128		
TOTAL VOL/HA	575.08	173.42	393.79	497.67	298.92	231.98	221.85	348.34	353.87	245.51		
CONIFER	474.53	127.73	144.95	267.96	181.46	55.53	12.73	95.54	264.97	155.90		
DECID	100.55	45.70	248.84	229.71	117.46	176.45	209.12	252.81	88.89	89.61		
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	474.53	122.42	144.95	267.96	181.46	55.53	12.73	95.54	264.97	155.90		
SB		5.31										
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW	76.92	45.70	246.27	145.95	117.46	171.04	209.12	168.59	88.89	89.61		
PB	23.64		2.57	83.77				84.21				
BW						5.41						
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	20.0	16.0	16.0	16.0	15.0	14.0		16.0	14.0	19.0		
SB		13.0										
SE												
PL												
PJ												
FA												
FB												
LA												
LT												
FD												
AW		14.0		22.0	18.0	16.0	17.0	19.0				
PB												
BW												
LIVE TREES TOT	1300.0	2200.0	600.0	400.0	1450.0	1100.0	2500.0	2600.0	1100.0	900.0		
CONIFER	1066.7	1900.0	150.0	150.0	1200.0	350.0	500.0	1900.0	900.0	650.0		
DECID	233.3	300.0	450.0	250.0	250.0	750.0	2000.0	700.0	200.0	250.0		
M.A.I. TOT VOL	5.6	2.6	1.1	4.1	3.9	2.7	3.4	3.6	2.5	1.9		
STAND AGE	84.0	65.4	131.0	109.3	76.3	86.3	62.5	72.5	106.0	80.0		
CANOPY HEIGHT	20.4	12.5	21.6	25.8	14.3	16.7	14.6	14.5	17.6	16.8		
HTD DOM+CODOM	26.5	15.4	29.1	27.3	23.0	19.7	17.5	23.0	28.5	24.0		
MEAN DIAMETER	22.5	12.7	28.2	35.3	15.5	17.9	12.1	13.2	19.8	18.2		

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW Sw PICEA GLAUCA/HYLOCOMIUM-PLEUROZIUM

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	447.85	265.20	679.10	130.14	403.31	184.95	607.48	134.73	
CONIFEROUS	429.42	205.56	679.10	139.86	387.13	179.11	607.48	140.84	
DECIDUOUS	18.43		90.65	31.56	16.19		87.63	30.17	
SPECIES VOLUME (M3/HA)									
SW	390.10	135.40	679.10	170.20	350.51	63.59	607.48	168.80	15.3
SB									
SE									
PL	12.32		172.46	46.09	11.73		164.16	43.87	16.0
PJ									
FA									
FB	23.57		168.80	59.76	21.67		160.79	55.20	15.5
LA									
LT	3.43		48.05	12.84	3.22		45.14	12.06	11.0
FD									
AW	11.27		90.65	28.55	10.69		87.63	27.62	12.0
PB									
BW	7.15		68.85	18.52	5.50		60.94	16.34	
LIVE STEMS/HA									
CONIFEROUS	1544.64	575.00	2700.00	792.37					
DECIDUOUS	75.00		300.00	99.89					
TOTAL	1619.64	700.00	2700.00	757.48					
BASAL AREA (M2/HA)									
CONIFEROUS	46.82	25.50	76.40	13.93					
DECIDUOUS	2.14		8.40	3.32					
TOTAL	48.96	33.70	77.00	12.52					
M.A.I. (M3/HA/YR)	4.31	2.54	7.66	1.61	3.83	2.43	6.87	1.45	
STAND AGE (YEARS)	108.0	64.0	178.5	34.8					
CANOPY HEIGHT (M)	18.8	13.6	23.6	3.5					
HGT DOM+CODOM (M)	23.6	18.7	28.5	3.5					
MEAN DBH (CM)	19.7	12.8	29.5	5.1					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW Sw PICEA GLAUCA/HYLOCOMIUM-PLEUROZIUM

PLOT NUMBER	25	26	27	84	136	123	10	61	107	135	118	133
TOTAL VOL/HA	368.82	480.79	601.39	679.10	265.20	461.76	569.92	271.17	583.89	441.26	492.37	304.20
CONIFER	368.82	480.79	599.03	679.10	256.02	371.11	567.16	205.56	565.28	441.26	492.37	304.20
DECID			2.35		9.18	90.65	2.76	65.60	18.61			
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	368.82	480.79	599.03	679.10	256.02	371.11	567.16	205.56	517.24	268.81	492.37	135.40
SB												
SE												
PL										172.46		
PJ												
FA												
FB												168.80
LA												
LT									48.05			
FD												
AW						90.65	2.76	64.43				
PB												
BW			2.35		9.18			1.17	18.61			
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	19.0	14.0	14.0	19.0	19.0	10.0	18.0	17.0	13.0	13.0	15.0	12.0
SB												
SE												
PL										16.0		
PJ												
FA												
FB												15.0
LA												
LT									11.0			
FD												
AW								12.0				
PB												
BW												
LIVE TREES TOT	1700.0	2400.0	750.0	2500.0	2300.0	700.0	2700.0	1266.7	1100.0	775.0	1050.0	2700.0
CONIFER	1700.0	2400.0	725.0	2500.0	2200.0	575.0	2600.0	1100.0	866.7	775.0	1050.0	2700.0
DECID			25.0		100.0	125.0	100.0	166.7	233.3			
M.A.I. TOT VOL	4.9	5.5	5.1	7.3	4.0	2.5	7.7	3.0	3.3	3.0	3.6	3.8
STAND AGE	76.0	87.5	117.0	93.0	64.0	146.0	74.0	95.7	178.5	145.0	138.5	82.3
CANOPY HEIGHT	17.9	18.9	23.6	21.5	14.9	23.1	13.6	14.6	19.5	22.2	22.0	13.9
HTD DOM+CODOM	22.0	19.0	23.8	27.5	18.7	26.0	20.8	21.3	28.5	26.6	28.3	20.3
MEAN DIAMETER	17.3	16.4	29.5	17.6	13.6	26.9	17.0	16.4	24.4	25.1	22.8	12.8

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW Sw PICEA GLAUCA/HYLOCOMIUM-PLEUROZIUM

PLOT NUMBER	127	83										
TOTAL VOL/HA	328.37	421.68										
CONIFER	328.37	352.83										
DECID		68.85										
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	168.01	351.97										
SB												
SE												
PL												
PJ												
FA												
FB	160.35	0.86										
LA												
LT												
FD												
AW												
PB												
BW		68.85										
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	17.0	14.0										
SB												
SE												
PL												
PJ												
FA												
FB	16.0											
LA												
LT												
FD												
AW												
PB												
BW												
LIVE TREES TOT	1600.0	1133.3										
CONIFER	1600.0	833.3										
DECID		300.0										
M.A.I. TOT VOL	4.1	2.6										
STAND AGE	81.0	133.0										
CANOPY HEIGHT	17.6	20.3										
HTD DOM+CODOM	21.7	26.0										
MEAN DIAMETER	16.7	20.0										

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW PL1 PINUS CONTORTA/ALNUS CRISPA

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	204.50	165.58	268.53	55.88	147.49	101.04	186.66	43.27	
CONIFEROUS	204.50	165.58	268.53	55.88	147.49	101.04	186.66	43.27	
DECIDUOUS									
SPECIES VOLUME (M3/HA)									
SW									
SB	1.07		3.21	1.85					
SE									
PL	203.43	165.58	268.53	56.62	147.49	101.04	186.66	43.27	16.7
PJ									
FA									
FB									
LA									
LT									
FD									
AW									
PB									
BW									
LIVE STEMS/HA									
CONIFEROUS	1900.00	600.00	2700.00	1135.78					
DECIDUOUS									
TOTAL	1900.00	600.00	2700.00	1135.78					
BASAL AREA (M2/HA)									
CONIFEROUS	27.90	18.70	37.10	9.20					
DECIDUOUS									
TOTAL	27.90	18.70	37.10	9.20					
M.A.I. (M3/HA/YR)	3.61	2.96	4.71	0.96	2.61	1.80	3.27	0.75	
STAND AGE (YEARS)	56.3	56.0	57.0	0.6					
CANOPY HEIGHT (M)	15.2	12.9	18.7	3.1					
HGT DOM+CODOM (M)	16.3	15.3	18.2	1.6					
MEAN DBH (CM)	14.8	11.8	19.7	4.3					

KEG RIVER MENSURATION DATA

PLOT SUMMARY - ASSOCIATION : MW PL1 PINUS CONTORTA/ALNUS CRISPA

PLOT NUMBER	89	11	91									
TOTAL VOL/HA	268.53	179.40	165.58									
CONIFER	268.53	179.40	165.58									
DECID												
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB		3.21										
SE												
PL	268.53	176.19	165.58									
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW												
SB												
SE												
PL	16.0	16.0	18.0									
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW												
LIVE TREES TOT	2700.0	2400.0	600.0									
CONIFER	2700.0	2400.0	600.0									
DECID												
M.A.I. TOT VOL	4.7	3.1	3.0									
STAND AGE	57.0	56.0	56.0									
CANOPY HEIGHT	14.0	12.9	18.7									
HTD DOM+CODOM	15.3	15.4	18.2									
MEAN DIAMETER	12.8	11.8	19.7									

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW P1Sb PINUS CONTORTA-PICEA MARIANA/HYLOCOMIUM-PLEUROZIUM

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	150.76	47.95	347.87	134.02	112.66	19.95	326.81	144.52	
CONIFEROUS	150.76	47.95	347.87	134.02	112.66	19.95	326.81	144.52	
DECIDUOUS									
SPECIES VOLUME (M3/HA)									
SW	46.54		186.15	93.07	43.44		173.77	86.88	17.0
SB	5.90		20.91	10.09					12.0
SE									
PL	98.32	47.95	161.73	48.02	69.22	19.95	153.04	60.22	16.3
PJ									
FA									
FB									
LA									
LT									
FD									
AW									
PB									
BW									
LIVE STEMS/HA									
CONIFEROUS	1302.07	825.00	2150.00	600.72					
DECIDUOUS									
TOTAL	1302.07	825.00	2150.00	600.72					
BASAL AREA (M2/HA)									
CONIFEROUS	22.40	10.00	42.70	14.14					
DECIDUOUS									
TOTAL	22.40	10.00	42.70	14.14					
M.A.I. (M3/HA/YR)	2.49	1.20	4.23	1.28	1.66	0.50	3.97	1.58	
STAND AGE (YEARS)	53.1	40.0	82.3	19.9					
CANOPY HEIGHT (M)	12.2	9.9	18.1	4.0					
HGT DOM+CODOM (M)	15.0	11.0	20.6	4.2					
MEAN DBH (CM)	14.6	10.6	24.4	6.5					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW P1Sb PINUS CONTORTA-PICEA MARIANA/HYLOCOMIUM-PLEUROZIUM

PLOT NUMBER	92	94	141	1								
TOTAL VOL/HA	106.20	101.00	47.95	347.87								
CONIFER	106.20	101.00	47.95	347.87								
DECID												
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW				186.15								
SB	2.69	20.91										
SE												
PL	103.51	80.09	47.95	161.73								
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW				17.0								
SB		12.0										
SE												
PL	17.0	17.0	15.0	16.0								
PJ												
FA												
FB												
LA												
LT												
FD												
AW												
PB												
BW												
LIVE TREES TOT	2150.0	1300.0	933.3	825.0								
CONIFER	2150.0	1300.0	933.3	825.0								
DECID												
M.A.I. TOT VOL	2.5	2.0	1.2	4.2								
STAND AGE	41.0	49.0	40.0	82.3								
CANOPY HEIGHT	10.8	10.0	9.9	18.1								
HTD DOM+CODOM	12.8	15.5	11.0	20.6								
MEAN DIAMETER	10.6	12.0	11.5	24.4								

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW P1A PINUS CONTORTA-POPULUS TREMULOIDES

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	208.12	202.27	213.97	8.28	149.54	124.24	174.85	35.79	
CONIFEROUS	157.35	134.99	179.72	31.63	122.15	120.06	124.24	2.96	
DECIDUOUS	50.76	22.55	78.98	39.90	27.39		54.79	38.74	
SPECIES VOLUME (M3/HA)									
SW	22.93		45.87	32.43	18.55		37.10	26.23	19.0
SB									
SE									
PL	134.42	89.12	179.72	64.06	103.60	82.96	124.24	29.19	21.5
PJ									
FA									
FB									
LA									
LT									
FD									
AW	46.62	22.55	70.69	34.04	23.58		47.17	33.35	20.0
PB	4.14		8.29	5.86	3.81		7.62	5.39	
BW									
LIVE STEMS/HA									
CONIFEROUS	1225.00	750.00	1700.00	671.75					
DECIDUOUS	775.00	650.00	900.00	176.78					
TOTAL	2000.00	1400.00	2600.00	848.53					
BASAL AREA (M2/HA)									
CONIFEROUS	19.45	16.50	22.40	4.17					
DECIDUOUS	6.75	4.30	9.20	3.46					
TOTAL	26.15	25.60	26.70	0.78					
M.A.I. (M3/HA/YR)	4.47	4.24	4.71	0.33	3.13	2.86	3.41	0.39	
STAND AGE (YEARS)	45.5	42.0	49.0	4.9					
CANOPY HEIGHT (M)	15.5	14.1	16.9	2.0					
HGT DOM+CODOM (M)	19.3	18.3	20.2	1.3					
MEAN DBH (CM)	12.8	10.9	14.7	2.7					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW P1A PINUS CONTORTA-POPULUS TREMULOIDES

PLOT NUMBER	18	70										
TOTAL VOL/HA	213.97	202.27										
CONIFER	134.99	179.72										
DECID	78.98	22.55										
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	45.87											
SB												
SE												
PL	89.12	179.72										
PJ												
FA												
FB												
LA												
LT												
FD												
AW	70.69	22.55										
PB	8.29											
BW												
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW	19.0											
SB												
SE												
PL	21.0	22.0										
PJ												
FA												
FB												
LA												
LT												
FD												
AW	23.0	17.0										
PB												
BW												
LIVE TREES TOT	1400.0	2600.0										
CONIFER	750.0	1700.0										
DECID	650.0	900.0										
M.A.I. TOT VOL	4.2	4.7										
STAND AGE	49.0	42.0										
CANOPY HEIGHT	16.9	14.1										
HTD DOM+CODOM	20.2	18.3										
MEAN DIAMETER	14.7	10.9										

KEG RIVER MENSURATION DATA
ASSOCIATION SUMMARY - MW Sb PICEA MARIANA/LEDUM GROENLANDICUM/MOSS

	TOTAL GROSS VOLUME				MERCHANTABLE GROSS VOLUME				SITE INDEX
	MEAN	MIN	MAX	S.D.	MEAN	MIN	MAX	S.D.	M @ 50YRS
VOLUME (M3/HA)									
TOTAL	46.62	10.56	139.07	62.02	29.43	0.77	102.07	48.61	
CONIFEROUS	46.47	10.56	138.49	61.73	29.43	0.77	102.07	48.61	
DECIDUOUS	0.15		0.59	0.30					
SPECIES VOLUME (M3/HA)									
SW	2.85		11.39	5.70	1.80		7.21	3.60	7.0
SB	42.09	10.49	121.76	53.58	26.47	0.77	90.24	42.72	8.8
SE									
PL									
PJ									
FA									
FB									
LA									
LT	1.53		5.33	2.56	1.15		4.62	2.31	14.0
FD									
AW									
PB									
BW	0.15		0.59	0.30					
LIVE STEMS/HA									
CONIFEROUS	968.75	475.00	1600.00	526.54					
DECIDUOUS	12.50		50.00	25.00					
TOTAL	981.25	475.00	1650.00	546.72					
BASAL AREA (M2/HA)									
CONIFEROUS	10.75	3.50	25.30	10.23					
DECIDUOUS	0.05		0.20	0.10					
TOTAL	10.80	3.50	25.50	10.33					
M.A.I. (M3/HA/YR)	0.53	0.15	1.27	0.51	0.30	0.01	0.93	0.42	
STAND AGE (YEARS)	71.5	47.3	112.3	28.7					
CANOPY HEIGHT (M)	7.4	5.1	12.1	3.2					
HGT DOM+CODOM (M)	8.7	4.5	14.3	4.1					
MEAN DBH (CM)	10.4	8.6	13.5	2.1					

KEG RIVER MENSURATION DATA
PLOT SUMMARY - ASSOCIATION : MW Sb PICEA MARIANA/LEDUM GROENLANDICUM/MOSS

PLOT NUMBER	85	43	3	105								
TOTAL VOL/HA	10.56	11.29	25.55	139.07								
CONIFER	10.56	11.29	25.55	138.49								
DECID				0.59								
SPECIES VOL/HA	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW				11.39								
SB	10.56	10.49	25.55	121.76								
SE												
PL												
PJ												
FA												
FB												
LA												
LT		0.80		5.33								
FD												
AW												
PB												
BW				0.59								
SI M@50 YEARS	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
SW				7.0								
SB	8.0	11.0	6.0	10.0								
SE												
PL												
PJ												
FA												
FB												
LA												
LT		14.0										
FD												
AW												
PB												
BW												
LIVE TREES TOT	600.0	475.0	1200.0	1650.0								
CONIFER	600.0	475.0	1200.0	1600.0								
DECID				50.0								
M.A.I. TOT VOL	0.1	0.2	0.4	1.3								
STAND AGE	69.5	47.3	57.0	112.3								
CANOPY HEIGHT	6.4	6.1	5.1	12.1								
HTD DOM+CODOM	7.3	8.7	4.5	14.3								
MEAN DIAMETER	8.6	9.7	9.9	13.5								